INTERNATIONAL STANDARD

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Second edition
2018-01

Agricultural machinery — Safety —

Part 8: Solid fertilizer distributors

Matériel agricole — Sécurité —

Partie 8: Distributeurs d'engrais solides

Reference number
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Contents

Page

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

ISO 4254-8 was prepared by the European Committee for Standardization (CEN) in collaboration with ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 3, *Safety and comfort*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 4254-8:2009), which has been technically revised and includes the following changes:

— revision of the edition 2009 under the Vienna Agreement (whole document);

— alignment with ISO 4254-1:2003 (whole document);

— addition of terms and definitions (3.5, 3.6);

— improved differentiation concerning the access for loading with and without load (4.5);

— additional requirements concerning the removal of spreading devices (4.8);

— addition of noise reduction requirements (4.10);

— alignment of the list of significant hazards (Annex A).

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

Introduction

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organisations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e. g. for maintenance (small, medium and large enterprises);

— consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the scope of this document. These hazards are specific to solid fertilizer distributors.

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

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

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

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

— Type-A standards (basis standards) give basic concepts, principles for design, and general aspects that can be applied to machinery.

— Type-B standards (generic safety standards) deal 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-hands controls, interlocking devices, pressure sensitive devices, guards).

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

Agricultural machinery — Safety —

Part 8: Solid fertilizer distributors

1 Scope

This document, intended to be used together with ISO 4254-1, specifies the safety requirements and their verification for the design and construction of mounted, semi-mounted, trailed or self-propelled fertilizer distributors for solid fertilizer application in agriculture and to be used by one operator only, e.g. full width solid fertilizer distributors, solid fertilizer broadcasters, distributors with oscillating tube and line-distributors, as well as solid fertilizer distributors driven by an auxiliary engine. In addition, it specifies the type of information on safe working practices (including residual risks) to be provided by the manufacturer.

This document deals with all the significant hazards (as listed in Annex A), hazardous situations and events relevant to solid fertilizer distributors, when they are used as intended and under the conditions foreseeable by the manufacturer (see Clause 4), excepting the hazards arising from:

— inadequate lighting of working area;

— inadequate visibility from drivers/operators position;

— inadequate seating;

— travelling functions (drive, braking etc.);

— rolling over;

— equipment for loading fertilizer into the machine;

— an auxiliary engine;

— moving parts for power transmission except for strength requirements for guards.

This document is neither applicable to maintenance or repairs carried out by professional service personnel nor to environmental hazards (except noise).

This document is not applicable to the following:

— combined seed and fertilizer drills which create a soil trench and deposit fertilizer in said trench;

— machines for distributing granulated pesticides;

— pedestrian controlled distributors;

— knapsack distributors.

This document is not applicable to solid fertilizer distributors which are manufactured before the date of its publication.

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 4254-1:2013, *Agricultural machinery — Safety — Part 1: General requirements*

ISO/TR 11688-1, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning*

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

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

ISO 14120:2015, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
solid fertilizer distributor
machine which spreads fertilizer on the soil surface or in crop but not incorporated into the soil

3.2
full width solid fertilizer distributor
solid fertilizer distributor (3.1) which spreads fertilizer over the whole surface and has a working width which is approximately the same as the machine width

3.3
solid fertilizer broadcaster
solid fertilizer distributor (3.1) which propels fertilizer over the whole surface and has a working width which is essentially wider than the machine width

3.4
solid fertilizer line-distributor
solid fertilizer distributor (3.1) which spreads fertilizer in bands separated by bands without fertilizer and which has a working width which is roughly the same as the machine width

3.5
access with load
mounting the machine and carrying, for example, a bag in order to fill the hopper with material

Note 1 to entry: Access with load normally does not allow three point contact.

3.6
access without load
mounting the machine without carrying material as additional equipment is used for filling the hopper, for example, filling auger

Note 1 to entry: Access without load normally allows three point contact.

4 Safety requirements, risk reduction and protective measures

4.1 General

Machinery shall comply with the safety requirements, risk reduction and protective measures of this clause. Unless otherwise specified in this document, the machine shall comply with the requirements of ISO 4254-1.

In addition, the machine shall be designed according to the principles of ISO 12100 for relevant but not significant hazards which are not dealt with by this document.

4.2 Stability when parked and for manual handling

4.2.1 General

The machine shall be designed to be stable as specified in ISO 4254-1:2013, 6.2.1. This shall be verified according to Clause 5. See also 6.1 a), b) and c).

4.2.2 Mounted machines fitted with rollers for manual handling when dismounted

Machines equipped with transport rollers for manual handling shall be designed so that they cannot overturn. This shall be verified according to Clause 5.

4.2.3 Machines with adjustable supporting devices

When the machine is fitted with adjustable supporting devices, it shall be possible for the operator to adjust these supporting devices without going beneath the machine.

This shall be verified by inspection.

4.3 Distributing components

4.3.1 Swivelling and movable distributing components

To limit the risk associated with overhead power lines, ISO 4254-1:2013, 8.2.3 p) and 8.3.4 shall be applied.

See also 6.1 d), e) and f).

This shall be verified by inspection.

4.3.2 Spreading plates and oscillating tubes

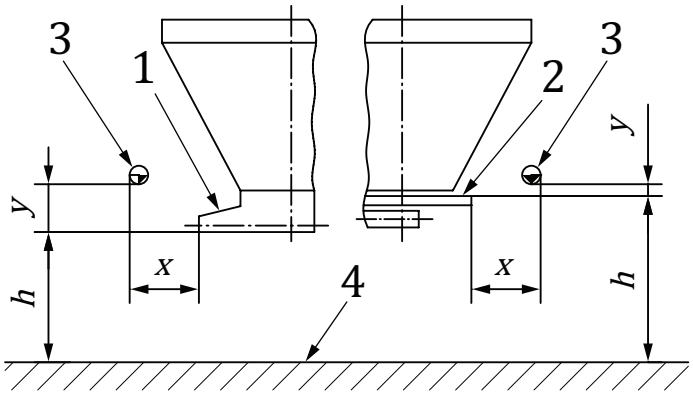
4.3.2.1 Protection against unintentional contact with distributing components

Machines shall be designed or guarded in such a way that any unintentional contact with the distributing components at the front, at the rear and at the sides is avoided (e.g. a barrier or a part of the machine). This shall not apply to solid fertilizer distributors with ground-wheel-driven distributing components.

This shall be verified by inspection. See also 6.1 g), h), i), j), k) and l).

4.3.2.1.1 For machines where the maximum working height (h) is less than 1 500 mm from the ground, guarding shall be provided which is continuous over the front, rear and both sides in accordance with the following:

a) a barrier located above the distributing components so that the dimensions given in Figure 1 and Table 1, respectively, or



Key

1 distributing component (oscillating distributor)
2 distributing component (rotary distributor)
3 barrier
4 ground
h maximum working height
x horizontal distance between the tip of distributing components and the barrier
y vertical distance between the tip of distributing components and the barrier

NOTE *h*, as shown, is only given here as an example.

Figure 1 — Guarding by the use of a barrier for machines where the working height is less than 1 500 mm (without horizontal overlap)

Table 1 — Distance between the tip of distributing components and the barrier (without horizontal overlap)

Horizontal distance mm	Vertical distance mm
$100 \leq x < 200$	$y \leq 200$
$x \geq 200$	$y \leq 300$

b) when a horizontal overlap between the side of the hopper or structural framework of the machine, at a height of 1 500 mm, and the path of motion of the tip of the distributing components (see Figure 2) of:

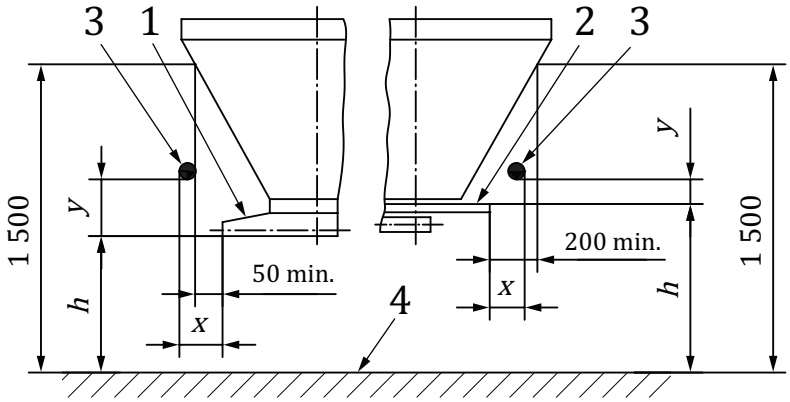
— 200 mm minimum in the case of rotary distributors, or

— 50 mm minimum in the case of oscillating distributors.

Then, a barrier located above the distributing components so that the dimensions given in Figure 2 and Table 2 are respected.

In the case where the barrier is located up to 100 mm inside the external contour of the hopper, then this barrier shall withstand a vertical and a horizontal load of 600 N.

Dimensions in millimetres



Key

1 distributing component (oscillating distributor)
2 distributing component (rotary distributor)
3 barrier
4 ground
h maximum working height
x horizontal distance between the tip of distributing components and the barrier
y vertical distance between the tip of distributing components and the barrier

NOTE *h*, as shown, is only given here as an example.

Figure 2 — Guarding by the use of a barrier for machines where the working height is less than 1 500 mm (with horizontal overlap)

Table 2 — Distance between the tip of distributing components and the barrier (with horizontal overlap)

Horizontal distance mm	Vertical distance mm
$50 \leq x < 100$ mm	$y \leq 100$ mm
$x \geq 100$ mm	$y \leq 150$ mm

In both cases a) and b), the dimension ($h + y$) shall not exceed 1 500 mm.

This shall be verified by measurement, test in accordance with ISO 4254-1, Annex C and inspection. See also 6.1 m).

4.3.2.1.2 For machines where the minimum working heights, *h*, are more than 1 500 mm from the ground, guarding shall be achieved by a barrier located below the distributing components which is continuous over the front, the rear and both sides compliant with the dimensions given in Figure 3 and Table 1.

This shall be verified by measurement and inspection.

4.3.2.1.3 For machines where the working heights (*h*) according to the operator's manual can be more or less than 1 500 mm from the ground, the dimensions and requirements given in 4.3.2.1.1 and 4.3.2.1.2 apply.

This shall be verified by measurement and inspection. See also 6.1 m).