
Agricultural machinery — Safety —

**Part 9:
Seed drills**

Matériel agricole — Sécurité —

Partie 9: Semoirs

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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	2
3 Terms and definitions	2
4 Safety requirements, risk reduction and protective measures	3
4.1 General.....	3
4.2 Controls.....	3
4.3 Swivelling and folding components.....	5
4.4 Hoppers.....	5
4.4.1 Cover.....	5
4.4.2 Moving components.....	5
4.5 Loading.....	6
4.5.1 Operator access to loading locations without load.....	6
4.5.2 Operator access to loading location with load.....	6
4.5.3 Other boarding means.....	10
4.6 Single seed drills.....	10
4.7 Blower.....	10
4.8 Flow rate calibration system.....	10
4.9 Hitching and clearance zone.....	10
4.10 Noise reduction as a safety requirement.....	12
5 Verification of the safety requirements and protective/risk reduction measures	12
6 Information for use	12
6.1 Instruction handbook.....	12
6.2 Safety and instructional signs.....	13
Annex A (informative) List of significant hazards	14
Annex B (informative) Examples of seed drills	17
Bibliography	20

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 voluntary nature of standards, 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. (standards.iteh.ai)

This document was prepared by Technical Committee ISO/TC 23, *Tractors and agricultural and forestry machinery*, Subcommittee SC 3, *Safety and comfort*. ISO 4254-9:2018

This third edition cancels and replaces the second edition (ISO 4254-9:2008), which has been technically revised.

The main changes compared to the previous edition are as follows:

- revision of the 2008 edition under the Vienna Agreement (whole document);
- alignment with ISO 4254-1:2013 and ISO 4254-8:2018;
- addition of terms and definitions (3.5, 3.6 and 3.7);
- modification of control requirements (4.2.2);
- modification of hopper requirements (4.4);
- modification of single seed drills requirements (4.6);
- addition of noise reduction requirements (4.10);
- alignment of the list of significant hazards (Annex A).

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

Introduction

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

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 organizations, 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 seed drills.

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.

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

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Agricultural machinery — Safety —

Part 9: Seed drills

1 Scope

This document, intended to be used together with ISO 4254-1, specifies the safety requirements, and their verification for design and construction of mounted, semi-mounted, trailed or self-propelled seed drills, including the seeding function of combined seed and fertilizer drills, and seed drills with integrated and inseparable powered soil-working tools used in agriculture. In addition, it specifies the type of information on safe working practices (including residual risks) to be provided by the manufacturer.

This document is also applicable to seeding systems where components for seed deposition in the soil, for seed metering and for seed storage are distributed between two or more linked vehicles.

This document deals with all significant hazards (as listed in [Annex A](#)), hazardous situations and events relevant to seed drills, when they are used as intended and under the conditions of misuse foreseeable by the manufacturer, excepting the hazards arising from

- electrostatic phenomena, (standards.iteh.ai)
- external influences on electrical equipment, [ISO 4254-9:2018](https://standards.iteh.ai/catalog/standards/sist/ec60ec92-7902-45fc-bc56-644a7b91aacc/iso-4254-9-2018)
- failure of energy supply, standards.iteh.ai/catalog/standards/sist/ec60ec92-7902-45fc-bc56-644a7b91aacc/iso-4254-9-2018
- failure and/or malfunction of the control system,
- inadequate visibility from drivers'/operators' position,
- travelling functions (drive, braking, etc.),
- break down of parts rotating at high speed,
- equipment for loading seeds (and fertilizer), and
- moving parts for power transmission except for strength requirements for guards.

This document is not applicable to

- fertilizer distributors designed only for solid fertilizer application (covered in ISO 4254-8),
- maintenance or repairs carried out by professional service personnel, or
- to environmental hazards (except noise), and
- to seed drills 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 4254-5, *Agricultural machinery — Safety — Part 5: Power-driven soil-working equipment*

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 4254-1, ISO 12100 and 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

seed drill

machine for sowing seeds (e.g. cereals) in a continuous manner

ISO 4254-9:2018

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Note 1 to entry: Examples of such machines are given in [Annex B](#).

3.2

seed drill with integrated and inseparable powered soil-working tools

single machine including the functions of seeding and of soil-working powered tools of which neither the *seed drill* ([3.1](#)) nor the powered soil working tools can be used separately

Note 1 to entry: Examples of such machines are given in [Annex B](#).

3.3

single seed drill

machine for sowing one seed (e.g. sugar beet) at a time

Note 1 to entry: Examples of such machines are given in [Annex B](#).

3.4

combined seed and fertilizer drill

machine which simultaneously applies seed and fertilizer

3.5

application rate

mass of seed applied per unit area, or number of seeds applied per unit area

3.6

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.

3.7**access without load**

mounting the machine without carrying material as additional equipment 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.

In case of seed drills with integrated and inseparable powered soil-working tools, these tools shall be protected in accordance with ISO 4254-5.

4.2 Controls

4.2.1 For seed drills mounted at the rear of integrated and inseparable powered soil-working machines, manual controls for the adjustment of the seed drills shall meet the following requirements:

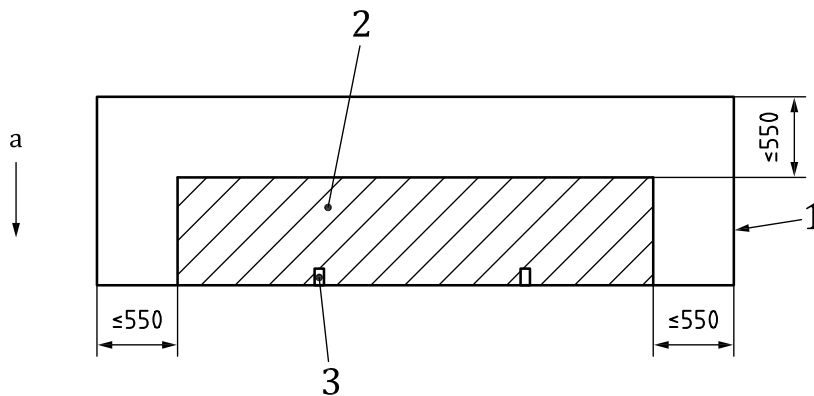
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- a) adjustments shall be possible at standstill (travel speed 0 km/h);
 - b) manual controls shall be located so that the operator does not need to be at the front of the machine or in a hazard zone to activate them, which is met if
 - manual controls are accessible to the operator standing on the ground and not located in the shaded area as shown in [Figure 1](#), or
 - manual controls are accessible to the operator standing on a place fulfilling the requirements of ISO 4254-1:2013, 4.8.2.

This shall be verified by measurement and inspection.

Markers are excluded when determining the outer limits of the seed drill.

See also [6.1 a\)](#).

Dimensions in millimetres



Key

- 1 outer limits of the seed drill
- 2 area in which the manual controls for the adjustments shall not be located
- 3 lower coupling points of the machine, if provided
- a Forward direction.

Figure 1 — Area where the manual controls for the adjustments shall not be located (in case of seed drills to be mounted at the rear of integrated and inseparable soil-working machines)

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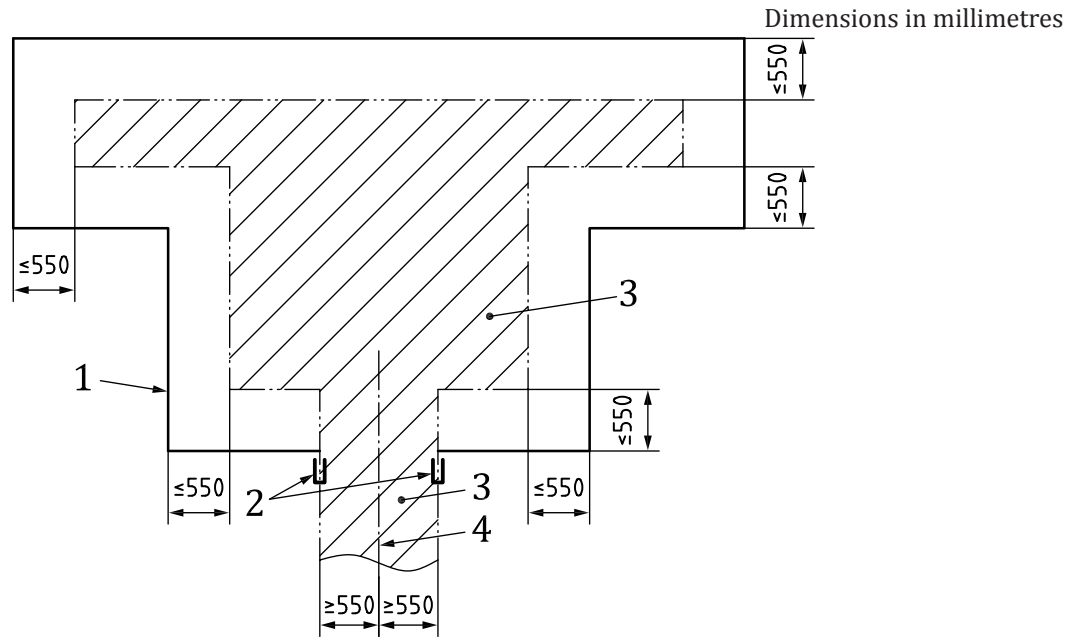
4.2.2 When 4.2.1 does not apply, manual controls for the adjustments located on the machine shall meet the following requirements: (standards.iteh.ai)

- a) adjustments shall be possible at standstill (travel speed 0 km/h);
- b) manual controls affecting the machine as a whole and accessible to the operator standing on the ground shall not be located in the shaded area as shown in Figure 2 or the manual controls are accessible to the operator standing on a place to stand in accordance with ISO 4254-1:2013, 4.8.2;
- c) when required by machine configuration, adjustment controls for individual row units specified in the operator's manual may be located in the shaded zone.

This shall be verified by measurement and inspection.

Markers are excluded when determining the outer limits of the seed drill.

See also 6.1 a), b) and c).



Key

- 1 outer limits of the machine
- 2 lower coupling points (shown only for information)
- 3 area where the manual controls for the adjustments shall not be located
- 4 axis of PTO drive shaft

Figure 2 — Area where the manual controls for adjustments shall not be located (in case of stand-alone seed drills)

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4.3 Swivelling and folding components

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

See also 6.1 d) and e).

4.4 Hoppers

4.4.1 Cover

Shearing and pinching hazards in case of unintentional closing (for example due to wind) shall be avoided.

If a hopper cover is provided and if the mass of the cover is greater than 10 kg, means shall be provided to retain the cover to the hopper and the cover shall be provided with one or more handles. The handles may be integral parts of the cover, provided the handles are suitable designed and clearly identified (e.g. by shape or colour).

4.4.2 Moving components

4.4.2.1 For machines with moving components inside the hopper such as rotating agitators or feed augers which show an entanglement, drawing-in, crushing or shearing hazard, access to these components shall be prevented by

- fixed guard according to ISO 12100:2010, 6.3.3.2.2 and ISO 14120, or