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**Agricultural machinery — Rotary disc mowers, rotary drum mowers and flail mowers — Test methods and acceptance criteria for protective skirts**

*Matériel agricole — Faucheuses rotatives à disque, faucheuses rotatives à tambour et faucheuses-broyeuses — Méthodes d'essai et critères d'acceptation des jupes de protection*

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## Foreword

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ISO 17103 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 7, *Equipment for harvesting and conservation*.

This second edition cancels and replaces the first edition (ISO 17103:2003), which has been technically revised.

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# Agricultural machinery — Rotary disc mowers, rotary drum mowers and flail mowers — Test methods and acceptance criteria for protective skirts

## 1 Scope

This International Standard specifies requirements and acceptance criteria for testing the protective skirts of rotary disc mowers, rotary drum mowers and flail mowers used in agriculture.

## 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 525, *Bonded abrasive products — General requirements*

ISO 845, *Cellular plastics and rubbers — Determination of apparent density*

## 3 Testing of protective skirts

### 3.1 Tensile resistance test

#### 3.1.1 Procedure

Five horizontal and five vertical samples, 50 mm in width, shall be tested separately in a tensile test machine, allowing a 250 mm sample length to be subjected to a tensile force increasing at a rate of 11 N/s.

In order to ensure repeatability of results, each sample shall be prepared according to 3.1.2. This applies for both the horizontal and the vertical samples.

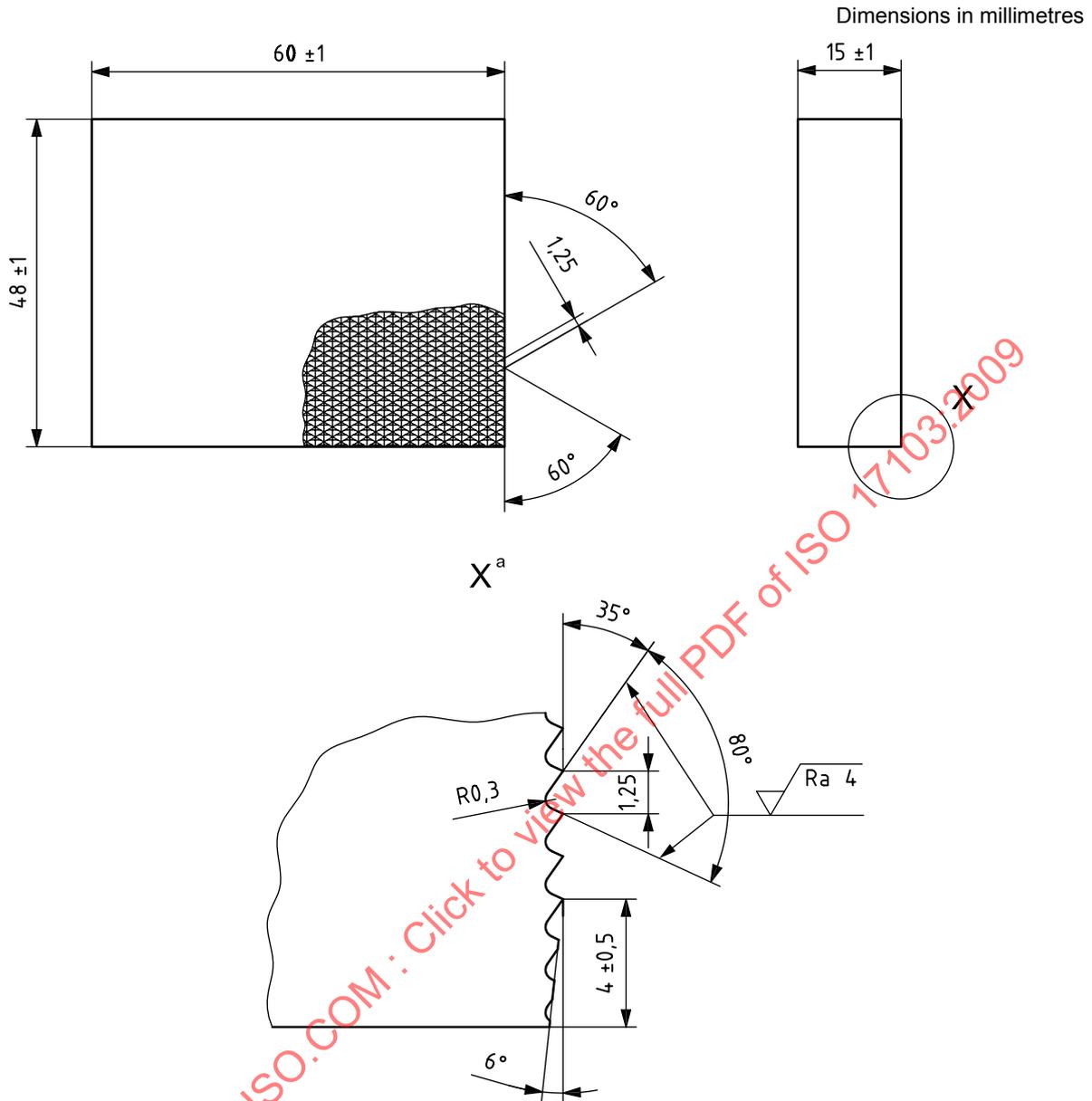
#### 3.1.2 Preparation of the samples

Five horizontal and five vertical samples shall be cut from a protective skirt material, each with a width of more than 50 mm. The length of each horizontal and vertical sample shall take into account the length of both clamps and shall allow a 250 mm sample length to be subjected to a tensile force.

No damaged or cut twine shall appear within the width of 50 mm. To this end, damaged twines are to be removed successively on each side until a twine does not show any damage over its whole length. The width of the sample shall be 50 mm. In case this is not possible, the width of the sample shall be as near as possible to 50 mm, but not less than 50 mm.

#### 3.1.3 Clamping

The clamping surface of the clamps in the tensile resistance test shall be equivalent to the surface shown in Figure 1. The width of the clamping surface shall be such that an overlap of at least 5 mm on each side, and which is greater than the sample width, is provided.



NOTE This is typical for all four sides (before knurling).

Figure 1 — Clamping device

**3.1.4 Acceptance criteria**

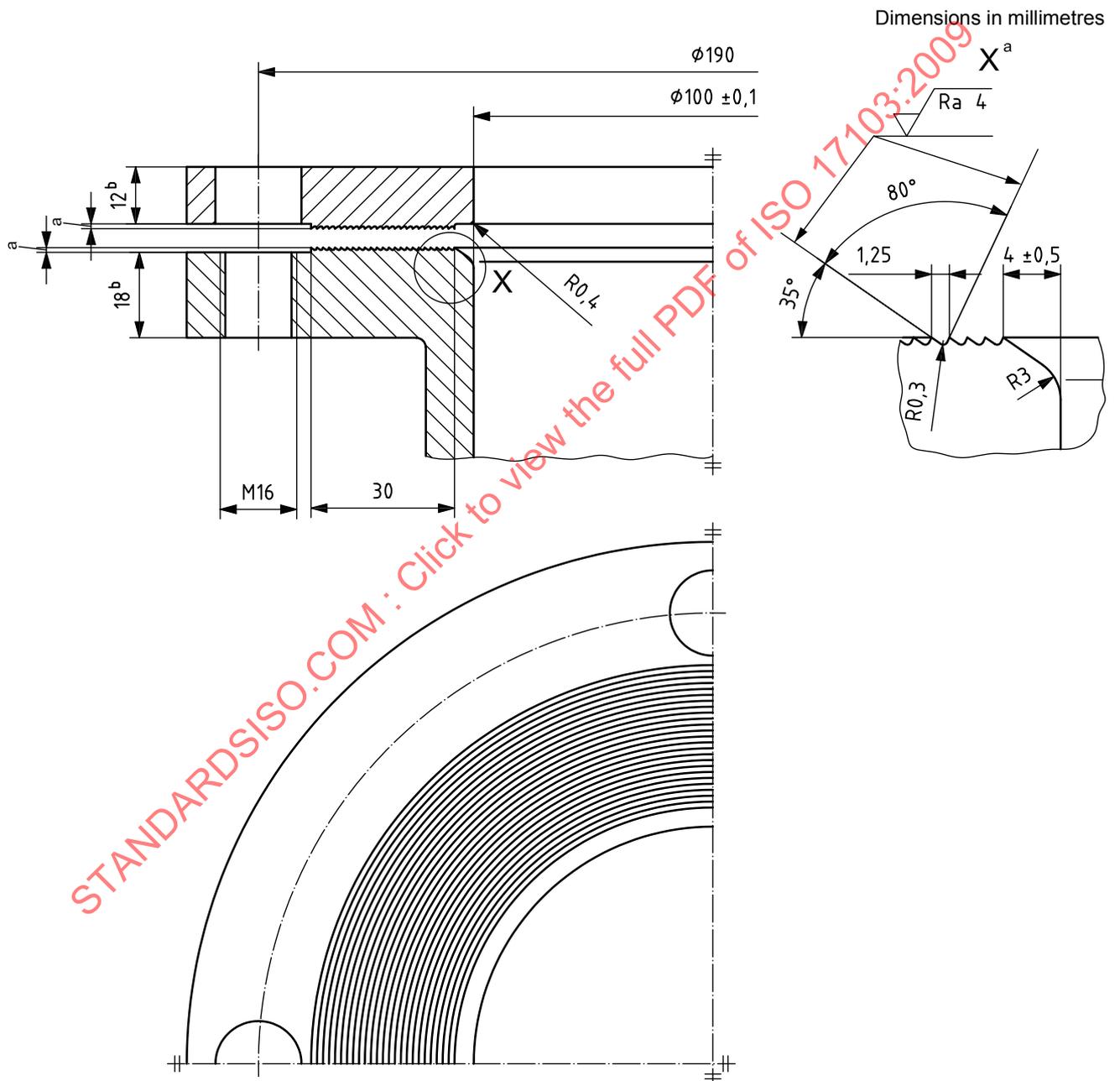
**3.1.4.1** Test results shall be considered acceptable when the average tensile resistance for horizontal and vertical samples is  $\geq 6\ 000\ \text{N}$  for machines with a maximum peripheral speed of the cutting element tip of  $\leq 90\ \text{m/s}$ , as specified by the manufacturer's operator manual.

**3.1.4.2** Test results shall be considered acceptable when the average tensile resistance for horizontal and vertical samples is  $\geq 8\ 000\ \text{N}$  for machines with a maximum peripheral speed of the cutting element tip of  $> 90\ \text{m/s}$ , as specified by the manufacturer's operator manual.

### 3.2 Perforation resistance test

#### 3.2.1 Procedure

Five samples shall be cut from the protective skirt material. Each sample shall be placed into a device leaving a free testing zone of 100 mm in diameter. The device for clamping each sample into the perforation testing device shall comply with the specifications as shown in Figure 2. Each sample shall be submitted to an increasing load of 11 N/s by means of a punch of 10 mm × 10 mm section having a chamfer of 1 mm × 45°.



a  $w = 1 \text{ mm}$ .

b This dimension is given as an example only.

Figure 2 — Device for clamping for perforation resistance test

### 3.2.2 Acceptance criteria

**3.2.2.1** Test results shall be considered acceptable when the average perforation force for all the tests is  $\geq 2\,500$  N and when the average perforation energy calculated from all tests is  $\geq 24$  N·m for machines with a maximum peripheral speed of the cutting element tip of  $\leq 90$  m/s, as specified by the manufacturer's operator manual.

**3.2.2.2** Test results shall be considered acceptable when the average perforation force for all the tests is  $\geq 4\,000$  N and when the average perforation energy calculated from all tests is  $\geq 30$  N·m for machines with a maximum peripheral speed of the cutting element tip of  $> 90$  m/s, as specified by the manufacturer's operator manual.

### 3.3 Wear resistance test

#### 3.3.1 Procedure

A sample of 200 mm in width shall be cut from the full height of the protective skirts. This sample shall be placed on an abrasive machine such that a  $400\text{ cm}^2$  surface area of the sample's free end rests on the abrasive wheel, which shall be 200 mm wide and have a diameter of 800 mm. The wheel shall be fitted with a 24 grain size abrasive belt, as specified in ISO 525, and run at 25 r/min.

The load on the  $400\text{ cm}^2$  surface shall be 5 N. In order to obtain uniform pressure, the sample pressure pad shall match the shape of the wheel and be coated with a 30-mm-thick layer of polystyrene having a density of  $35\text{ kg/m}^3$ , as specified in ISO 845.

#### 3.3.2 Acceptance criteria

Test results shall be considered acceptable when, on a reinforced skirt, reinforcement fibres are not worn through after 10 000 rotations or, on a non-reinforced skirt, the thickness is still at least half that of the original thickness after 10 000 rotations.

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