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## Forestry machinery — Portable chain-saw front hand-guard — Dimensions and clearances

*Machines forestières — Protecteur de la main tenant la poignée avant des scies à chaîne portatives — Dimensions et dégagements*

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## Foreword

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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](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 17, *Manually portable forest machinery*.

This fifth edition cancels and replaces the fourth edition (ISO 6533:2012), which has been technically revised.

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

- to reflect worst case conditions, it has been clarified, that handle clearance between front handle and front hand-guard, measured with gauge A, shall be fulfilled without pre-load on the front hand-guard as described in [Clause 4 b\) 2\)](#);
- to reflect worst case conditions, it has been clarified that height  $H_1$  shall be passed with pre-load on the front hand-guard as described in [Clause 4 b\) 2\)](#) and  $H_{1A}$  without pre-load on the front hand-guard;
- to proscribe direct contact by the fingers ( $\leq 120$  mm), a safety radius  $> 120$  mm around the closest unprotected part of the saw-chain was defined.

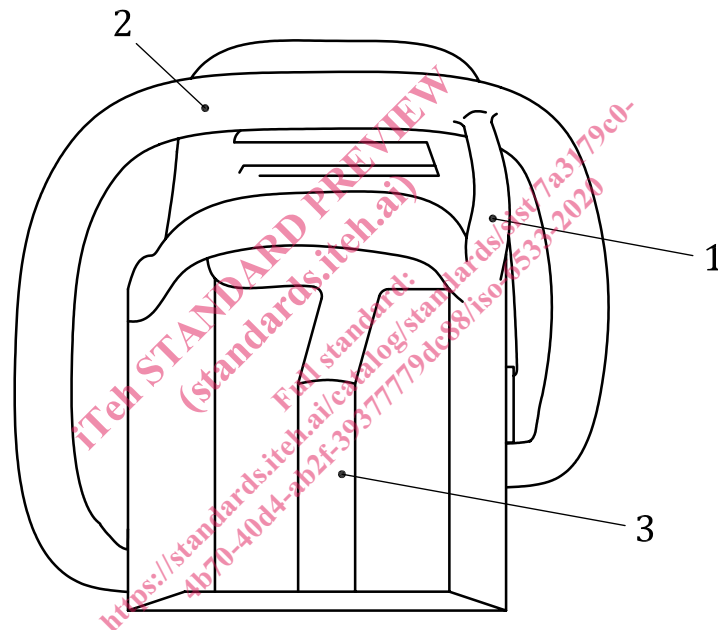
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# Forestry machinery — Portable chain-saw front hand-guard — Dimensions and clearances

## 1 Scope

This document specifies the dimensions and clearances for front hand-guards and their openings on portable hand-held chain-saws. These dimensions and clearances ensure the necessary safety provided by the hand-guard, which serves as both a shield between the operator's hand and the saw-chain and as an actuator for manually operated chain brakes.

For chain-saws with wrap around handles (see [Figure 1](#)), this document is not applicable to the portion of the front handle to the right (when viewed from the rear) of the top brace.



### Key

- 1 top brace
- 2 front handle
- 3 rear handle

**Figure 1 — Example of a chain-saw with a wrap around the handle — Rear view**

## 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 6531, *Machinery for forestry — Portable chain-saws — Vocabulary*

IEC 61032, *Protection of persons and equipment by enclosures — Probes for verification*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6531 apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 4 General

The dimensions of the front hand-guard and the clearances shall be in relation to the intended position of the left hand on the front handle during vertical cutting (bucking), determined using defined gauges (see [Clause 5](#)).

Unless otherwise specified, the following is applicable when determining the dimensions and clearances.

- a) The chain-saw shall be kept in the upright position with guide bar centreline horizontal; and the total forces when applying the gauges (force on gauge plus gauge gravity force in probing direction) shall be  $10\text{ N}_{-1}^0\text{ N}$ .
- b) If the front hand-guard also activates the chain brake, the measurements shall be made
  - 1) with the front hand-guard in the position for non-activated chain brake, and
  - 2) with a force of  $10\text{ N}_{-1}^0\text{ N}$  applied at the top edge of the guard, at  $45^\circ$  in a forward and downward direction relative to the guide bar centreline and 50 mm to the left of the reference point  $X_0$  (see [Clause 6](#) and [Figure 5](#)), when viewed from the rear (to eliminate any free play in the hand-guard mounting).

### 5 Gauge dimensions

Rigid gauges of the types and sizes specified in [Table 1](#) shall be used to determine the dimensions and clearances.

**Table 1 — Gauge dimensions**

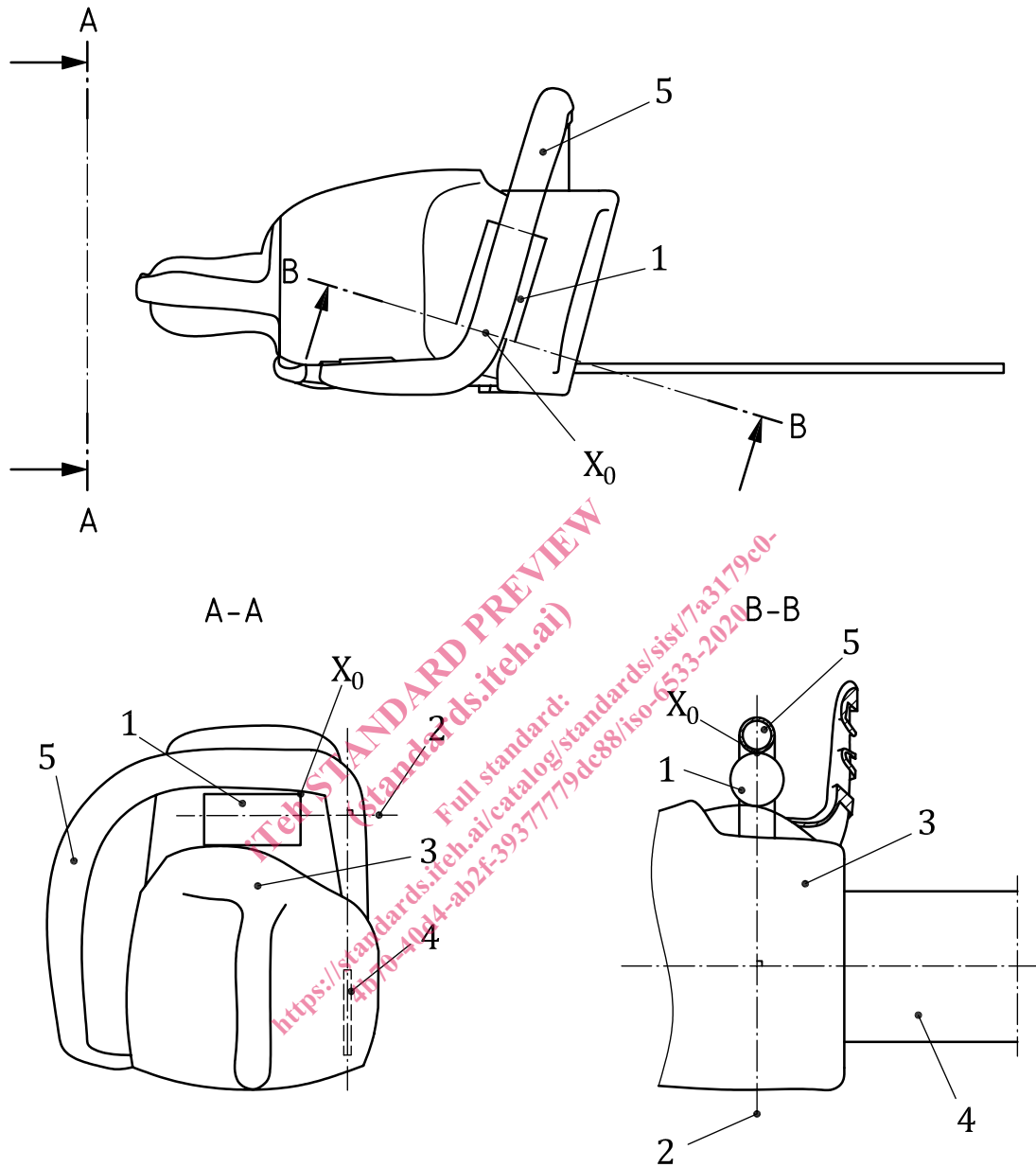
Dimensions in millimetres

Gauge type	Diameter $D \pm 0,1$	Length $L \pm 0,1$	Corner radius $r_{-0,2}^0$
A	35	100	5
B	70	100	0,5
C	56	82	0,5

### 6 Determination of reference point $X_0$

**6.1** The reference point  $X_0$  shall be determined, when viewed from the rear, using a type A gauge kept furthest to the right side of the front handle, directly below and in line with the centreline of the front

handle and held horizontally, so that the gauge contacts the housing and the front handle (see Figure 2).  $X_0$  is the contact point of the upper right edge of the gauge with the front handle.



#### Key

- 1 type A gauge
- 2 type A gauge centreline
- 3 chain-saw body
- 4 guide bar
- 5 front handle

**Figure 2 — Definition of reference point  $X_0$  when there is gauge contact between the housing and the front handle**

**6.2** When the chain-saw is designed in such a way that a type A gauge of 100 mm length cannot be inserted between the handle and the housing, and  $X_0$  cannot be determined using such a gauge, the gauge length can be shortened (though no more than necessary). Using this modified gauge,  $X_0$  shall be determined according to all other requirements of 6.1.





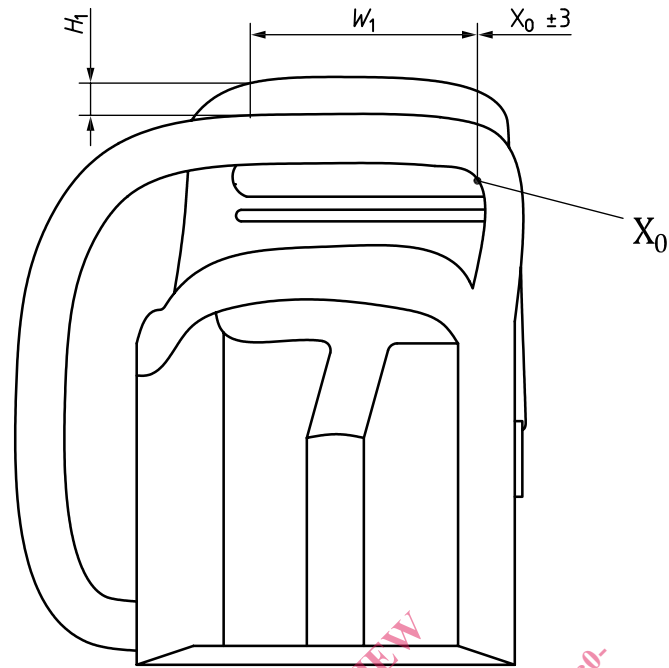


Figure 4 — Front hand-guard width,  $W_1$ , from the rear view of the chain-saw

## 7.2 Front hand-guard height over front handle, $H_1$ and $H_{1A}$

The measurement of the vertical height  $H_1$  and  $H_{1A}$  shall be made in a plane parallel to the guide bar plane and perpendicular to the guide bar centreline (see Figure 5).

Any free play in the guide bar fixing shall be taken up by tightening the guide bar to the saw body in its uppermost position.

The height,  $H_1$ , above the top contour of the front handle shall be at least 20 mm.

When the front hand-guard also activates the chain brake, this height shall be at least

- 20 mm with disengaged chain brake ( $H_1$ ), with a pre-load according to Clause 4 b) 2) applied to the guard, and
- 0 mm for engaged chain brake ( $H_{1A}$ ) without pre-load.