
**Footwear sizing — In-shoe
measurement —**

**Part 1:
Shoe length**

Pointures des chaussures — Mesurage interne —

Partie 1: Longueur de la chaussure

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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).

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A list of all parts in the ISO 19410 series can be found on the ISO website.

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Footwear sizing — In-shoe measurement —

Part 1: Shoe length

1 Scope

This document specifies a method for measuring the effective shoe length to accommodate the foot.

This document is not applicable to heel and toe open shoes (example: sandals).

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/TS 19407:2015, *Footwear — Sizing — Conversion of sizing systems*

ISO/TS 19408, *Footwear — Sizing — Vocabulary and terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TS 19407 and ISO/TS 19408 apply.

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

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

4 Principle

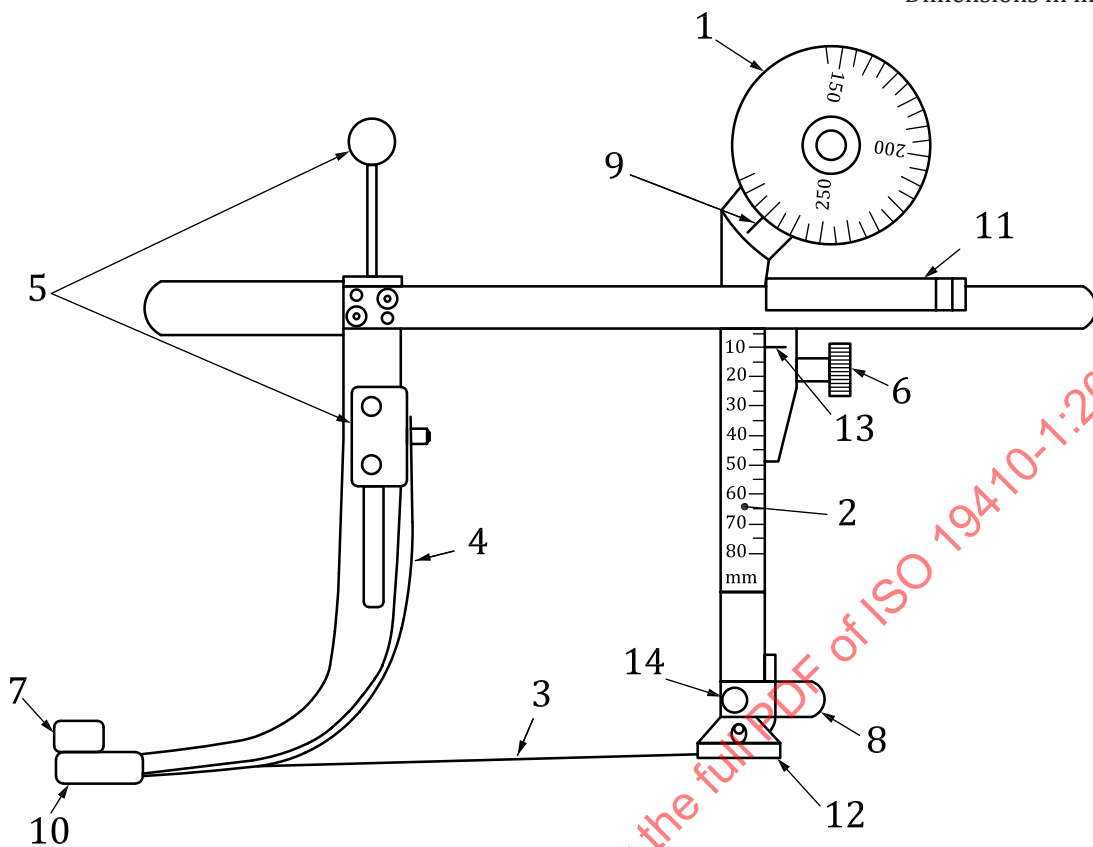
A toe sensor of specified dimensions is inserted into the toe of the footwear and a second sensor located against the inside of the maximum heel swell of the back curve. The distance between the two sensors measured along the insole surface, or close to it, is taken as the effective length of the footwear. The effective length value can be compared with ISO/TS 19407 to determine the nominal shoe size.

5 Apparatus

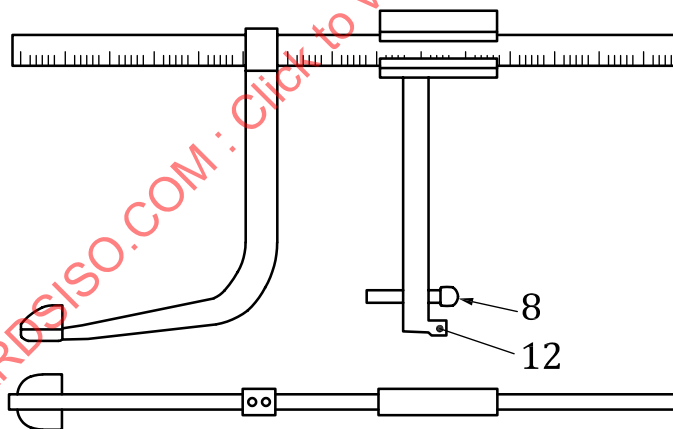
The usual laboratory apparatus and, in particular, the following shall be used.

5.1 Length measurement, comprising a toe sensor, a heel sensor and a means of measuring the distance between them along the insole surface, as illustrated in [Figure 1 a](#)). Depending on the size and design of the shoes, the appropriate device can be used.

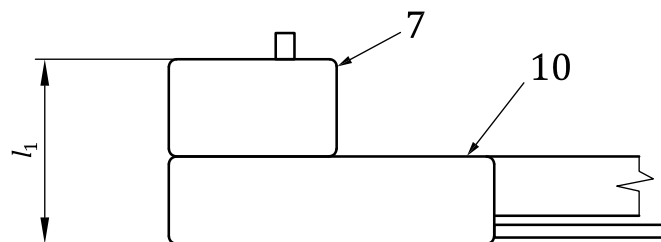
Dimensions in millimetres



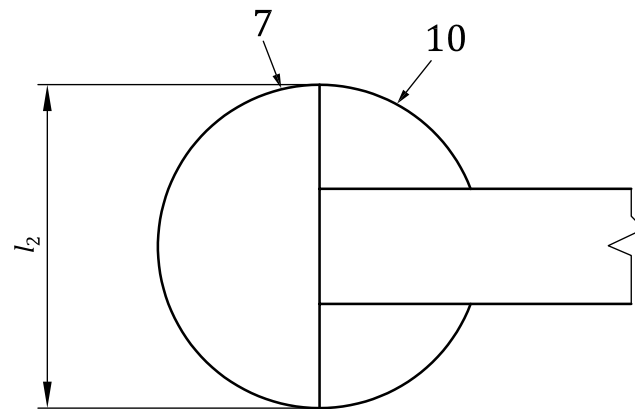
a) Example of length measuring device



b) Example of a simplified length measuring device



c) Toe height sensor with toe height piece - Front view



d) Toe height sensor with toe height piece – Top view

Key

- 1 length scale
- 2 heel height scale
- 3 measuring wire
- 4 feather to press the wire (key 3) down on insole
- 5 mechanism to move part (key 4) down onto (key 3)
- 6 screw to fix part (key 2)
- 7 replaceable toe height piece
- 8 heel back curve sensor
- 9 reading mark calibrated to read effective length (mm)
- 10 toe sensor (to include height)
- 11 mechanism to move the heel back curve sensor parts (keys 1, 6, 2 and 8)
- 12 heel seat sensor
- 13 reading mark of heel height
- 14 screw to fix heel back curve sensor (key 8)
- l_1 toe height
- l_2 width of toe sensor

Figure 1 — Length measuring device

If the footwear to be measured has a heel height <25 mm, then the device may be simplified by removing the measuring wire (key 3) and fixing the heel height scale (key 2) to zero heel height [see example in [Figure 1 b](#)]. At 25 mm, the difference between a linear measure between the toe and heel will not be significantly different from one following the insole surface.

5.1.1 Toe height sensor, defined width, height and shape, specified as in [Figures 1 c](#)) and [1 d](#)), to measure the effective shoe length in accordance with ISO/TS 19408.

The height (l_1), including toe sensor (key 10) and replaceable toe height piece (key 7) [see [Figure 1 c](#)] of the toe sensor depends of the marked shoe size (see [Table 1](#)). The height of the toe sensor is 20 mm for women and men shoes, for children see [Table 1](#). The foot length results from marked shoe size shall be in accordance with ISO/TS 19407.

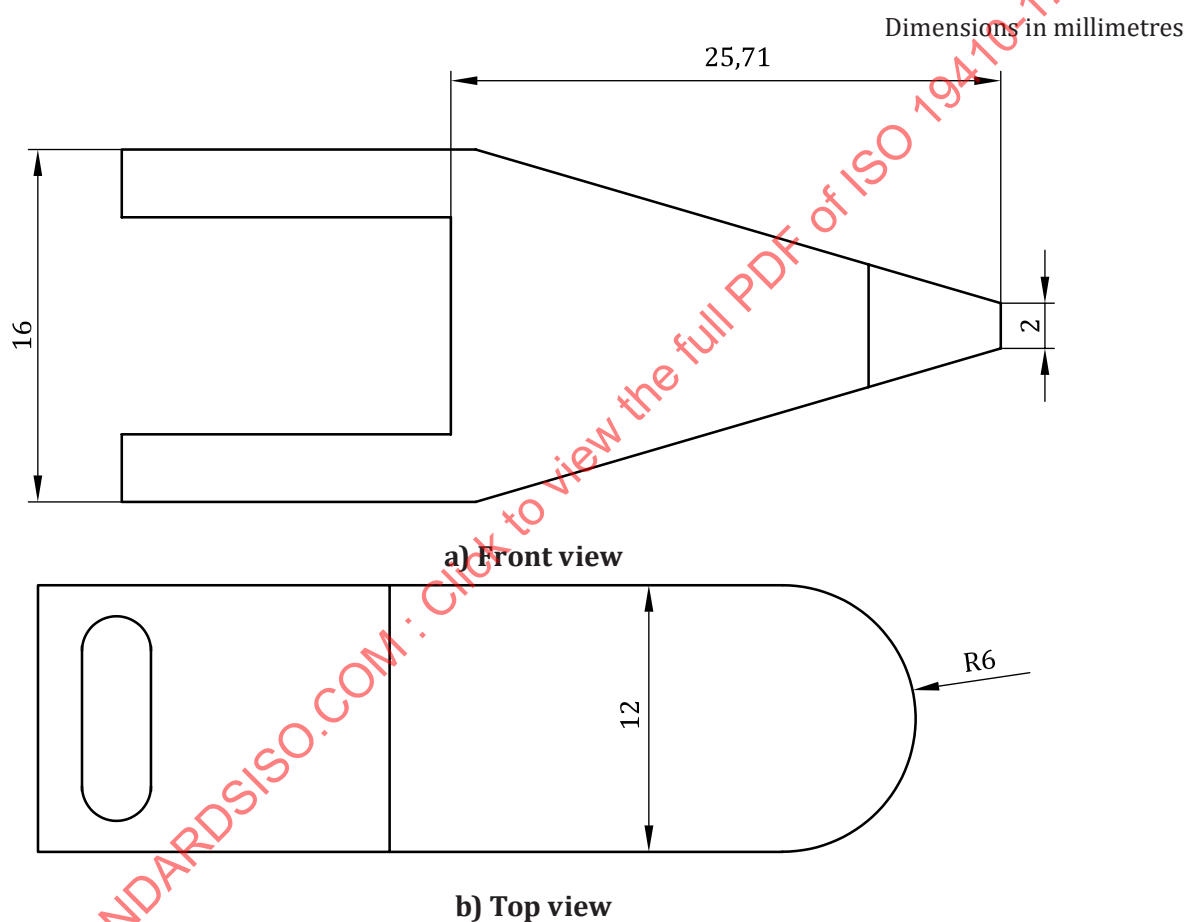
Table 1 — Toe sensor height — Children footwear

Foot length mm	109 to 132	133 to 156	157 to 175	176 to 195	196 to 215	216 to 241	242 to 255	256 to 268
Toe height mm	13	14	15	16	17	18	19	20

The width (l_2) of the top sensor [see [Figure 2 b\)](#)] for children footwear up to a foot length of 218 mm is 20 mm, for all other children, women and men footwear, it is 30 mm.

5.1.2 Heel back curve sensor

The heel back curve sensor has the dimensions given in [Figure 2](#).

**Figure 2 — Details of heel back curve sensor**

The device for boots has a longer forepart to bring the toe sensor in the right position. This is necessary for boots without closure elements, for example without shoelaces.

5.2 Ruler (in mm), zero at the edge of the ruler.

6 Sampling

The test pieces are complete footwear including in-socks if applicable. A minimum of one shoe shall be tested for design check. For quality check, a minimum of two pairs of each size shall be tested.

7 Procedure

- 7.1** Open all closure elements of the footwear, if possible, to make the placement of the device easier.
- 7.2** Look at the size of the shoe or boot. Select the replaceable toe height piece [see [Figure 1 a](#)], key 7], depending of shoe size (see [5.1](#) and for children, see [Table 1](#)) and attach it on toe sensor [see [Figure 1 a](#)], key 10].
- 7.3** Measure the technical heel height of the shoe using the ruler ([5.2](#)). Adjust this value at the scale 2 of the measuring device until reading mark of heel height [see [Figure 1 a](#)], key 13]. Fix the scale with a screw [see [Figure 1 a](#)], key 6].
- 7.4** Insert the device in the shoe. The heel seat sensor [see [Figure 1 a](#)], key 12] shall be placed on the insole. Place the heel back curve sensor [see [Figure 1 a](#)] keys 1 and 8] to the correct position of the heel curve maximum, change its height and fix it with a screw [see [Figure 1 a](#)], key 14]. Push the toe sensor (see [Figure 1](#), key 10) with a replaceable toe height piece [see [Figure 1 a](#)], key 7] without a distortion of the upper into the toe area of the shoe (see [Figure 3](#)). Fix the heel back curve sensor part [see [Figure 1 a](#)], key 8] using the hand piece mechanism to move the heel back curve sensor parts [see [Figure 1 a](#)], key 11]. Do not distort the upper. Check the direction of the toe sensor to be sure that it moves into the shoe top. Press the wire [see [Figure 1 a](#)] key 3] down at the shoe insole by using the knob of piece [see [Figure 1 a](#)], key 5].
- 7.5** Read the value of effective shoe length from the scale 1 (accuracy 0,5 mm) at the mark line [see [Figure 1 a](#)], key 9].

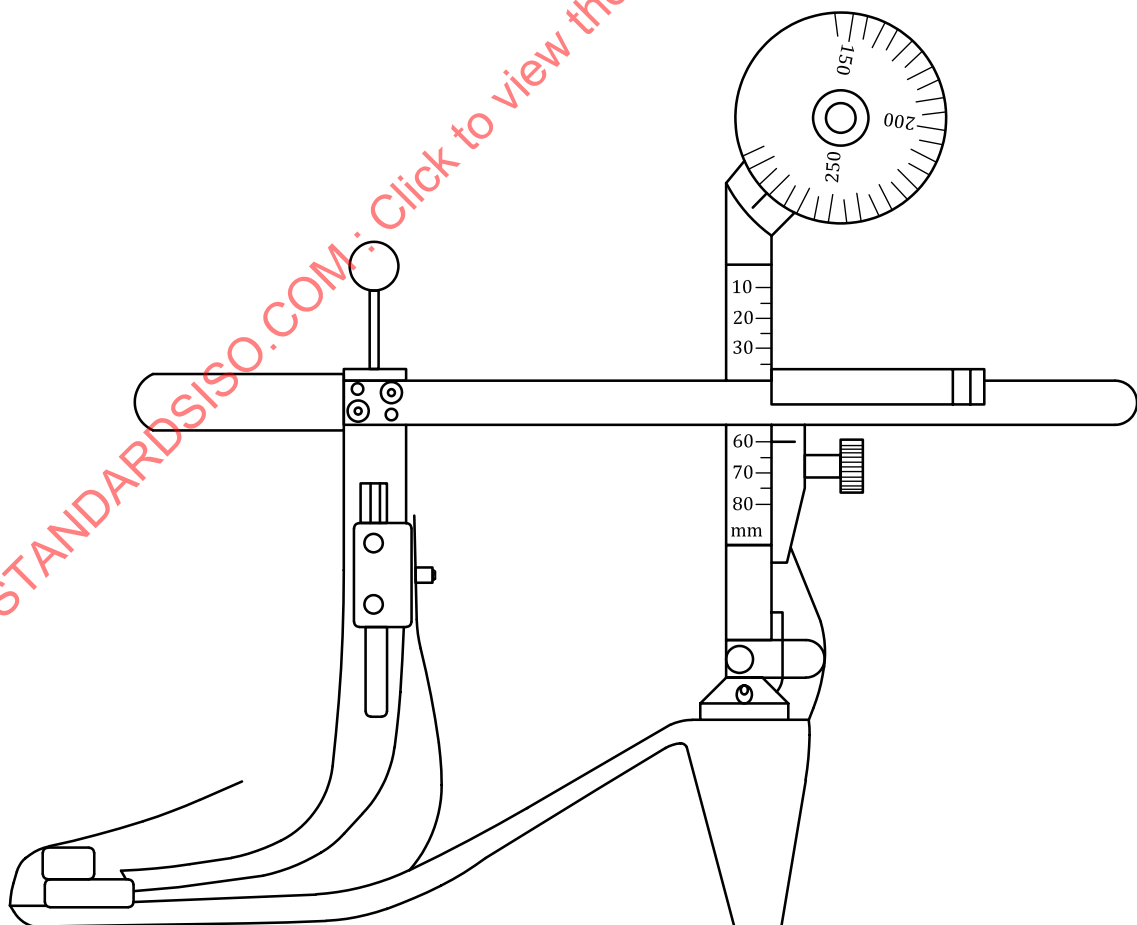


Figure 3 — Placement of device inside of the shoe