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Footwear — Sizing — Vocabulary

Chaussures — Pointures — Vocabulaire

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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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This document was prepared by Technical Committee ISO/TC 137, *Footwear sizing designations and marking systems*.

This first edition of ISO 19408 cancels and replaces ISO/TS 19408:2015, which has been technically revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Footwear — Sizing — Vocabulary

1 Scope

This document defines terms commonly used for measuring feet and lasts and for determining the size of footwear.

This document complements ISO 19952.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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/

3.1 Foot dimensions and shoe sizing

3.1.1
central line of foot
line that connects the centre of the back of the heel (maximum point of the heel curve) and a point in the forefoot area

Note 1 to entry: See Figure A.1 c) and d), and Figure A.5 b).

Note 2 to entry: There are two methods to define the point in the forefoot:

— Method 1: at the end of the second toe;

— Method 2: in the middle of the *tread width of the foot* (3.1.15).

3.1.2
design allowance
additional allowance to the *effective shoe length* (3.1.3) added to the forefoot area of the last

Note 1 to entry: See Figure A.2.

3.1.3
effective shoe length
distance of the *foot length* (3.1.4) including a *toe allowance* (3.2.16)

Note 1 to entry: See Figures A.2 and A.3.

3.1.4
foot length
maximum horizontal distance from the centre of the back of the heel (maximum point of heel curve) to the end of the most prominent toe, with the subject standing with the weight of the body equally distributed on both feet, barefoot or wearing thin hose that does not significantly affect the dimensions of the foot

Note 1 to entry: There are different methods to measure the foot length:

— Method 1: it is measured along the *inside tangent* (3.1.6) (see Figure A.1 a) and b);

— Method 2: it is measured parallel to the *central line of foot* (3.1.1). There are two methods of measuring the central line (method 2 a and 2 b). See Figure A.1 a), c) and d).

3.1.5
heel height of shoe
vertical height of the extreme rear end of the heel of the shoe down to the ground plane

Note 1 to entry: See Figure A.3.

3.1.6
inside tangent
vertical plane tangential to the point of maximum inside heel swell and the point of maximum swell at the first metatarsal head

Note 1 to entry: See Figure A.1 b) and Figure A.5a).

3.1.7
instep point of foot
intersection of the vertical (normal) plane at a given percentage of foot length with the highest point on the upper (dorsal) surface of the foot

Note 1 to entry: See Figure A.16.

Note 2 to entry: There are different percentages used to mark the instep point:

— Method 1: 50 % of foot length;

— Method 2: 55 % of foot length.

3.1.8
joint girth of the foot
anatomic ball girth of the foot
circumference of the foot in a vertical plane around the heads of the first and fifth metatarsal bones

Note 1 to entry: Measurement is made under the same conditions as *foot length* (3.1.4).

Note 2 to entry: See Figure A.4.

3.1.9
length grading interval
difference between adjacent whole shoe sizes

3.1.10
linear width
maximum horizontal distance, *o*, between the outside swell of the head of the first metatarsal and outside swell of the head of the *fifth metatarsal of the foot* (see Figure A.12) or the corresponding points at the last

Note 1 to entry: Measurement of the foot is made under the same conditions as *foot length* (3.1.4). There are two methods to obtain the first and fifth metatarsal head points:

— Method 1: the *inside tangent* (3.1.6) and the parallel line touching the fifth metatarsal [see Figure A.5 a)];

— Method 2: the inside and outside tangent lines which are parallel with the *central line of foot* (3.1.1) touching the two points [see Figure A.5 b)].

3.1.11
shoe size
designated size marking of a shoe or last made for a given *foot length* (3.1.4) in any given shoe sizing system

3.1.12
shoe width
designated marking indicating the joint/ball girth or width fitting of the footwear or last, usually based on the joint girth or width measurement of the last

Note 1 to entry: Designation can be by letters, e.g. A, B, C, or numbers, e.g.1, 2, 3.

3.1.13
stick width of the foot
linear width
perpendicular distance between the first metatarsal head and the fifth metatarsal head

Note 1 to entry: See Figure A.12.

Note 2 to entry: Measurement is made under the same conditions as *foot length* (3.1.4). There are two methods to obtain the first and fifth metatarsal head points:

— Method 1: the *inside tangent* (3.1.6) and the parallel line touching the *fifth metatarsal* [see Figure A.5 a)];

— Method 2: the inside and outside tangent lines which are parallel with the *central line of foot* (3.1.1) touching the two points. There are two methods of central line (method 2 a and 2 b) [see Figure A.5 b)].

3.1.14
width grading interval
difference between adjacent girth or width fittings within the same shoe size or from shoe size to shoe size

3.1.15
tread width of ball area of foot
distance b between the maximum swell of the first metatarsal as a point of the foot line touching the ground and the maximum swell of the fifth metatarsal as a point of the foot line touching the ground

Note 1 to entry: See Figures A.5 and A.12.

3.1.16
long heel girth of foot
circumference around the foot passing through the point at the back of the heel where the foot just touches the ground on which the foot stands and the *instep point of foot* (3.1.7)

Note 1 to entry: See Figure A.16.

3.1.17
ankle girth
smallest horizontal girth, i, at the lower leg over the malleolus

Note 1 to entry: See Figure A.16.

3.1.18
calf girth
maximum horizontal girth, u, in the calf area of lower leg

Note 1 to entry: See Figure A.16.

3.1.19
under knee girth
smallest horizontal girth, w, below the knee and above calf

Note 1 to entry: See Figure A.16.

3.1.20
short heel girth of foot
shortest circumference, t_1, around the foot passing through the point at the back of the heel where the foot just touches surface on which the foot stands

Note 1 to entry: See Figure A.16.

3.1.21
shoe
assembly of coverings for the foot usually made of a strong material

3.2 Last dimensions

3.2.1
bottom pattern length of last
last bottom length
length of the last along the bottom surface of the central line from the heel point to the furthermost prominent point of the feather line

Note 1 to entry: See Figure A.6.

Note 2 to entry: The heel point is the furthermost back point of the heel at the central line [see Figure A.10 a)]

3.2.2
central line of last bottom pattern
designed line at the last bottom that connects the heel point and a point in the forepart area of the last

Note 1 to entry: The heel point is the furthermost back point of the heel at the central line [see Figure A.10 a)]

Note 2 to entry: There are three methods to design that line:

— Method 1: second point in the forepart area is the prominent point of the last top at the feather line [see Figure A.10 a)];

— Method 2: second point is in the middle of the *tread width of the last* (3.1.15) [see Figure A.10 b)];

— Method 3: the line constructed following Figure A.14.

3.2.3
effective last length
foot length (3.1.4) value, measured from the back of the *heel curve of the last* (3.2.5) and along the bottom of the last, plus *toe allowance* (3.2.16)

Note 1 to entry: See Figure A.3 and A.11.

3.2.4
feather line
perimeter (edge) of the bottom pattern of the last

Note 1 to entry: See Figure A.7.

3.2.5
heel (or back) curve of last
profile line of the heel part of the lasts

Note 1 to entry: See Figure A.6.

3.2.6
heel height of last
technical heel height
vertical distance between the underside of the extreme end of the last and the ground plane with the last in its normal orientation

Note 1 to entry: See Figure A.8.

3.2.7
heel seat
section of the last bottom between the extreme rear point of heel and the point where the waist curve begins, with the last in its normal orientation

Note 1 to entry: See Figure A.11.

3.2.8
heel width
tread width of heel
measurement of heel that is a distance of a given percentage of foot length

Note 1 to entry: The foot length of the marked shoe size is selected from the conversion table in ISO 19407. The given percentages of this length are measured. The measured distance of the maximum of heel curve is subtracted from this value. This value is then marked at the central line of the last bottom measured from the back of the heel. A line is drawn perpendicular to the central line up to the lateral and medial feather line.

3.2.8.1
tread width of heel
distance, q, between the two points marked is the *heel width* (3.2.8)

Note 1 to entry: See Figure A.13.

3.2.8.2
linear width of heel
swell width
distance, r, between the lateral and medial points following the contour of the surface of the bottom

Note 1 to entry: Measured by extending the line of the *heel width* (3.2.8) up to the maximum swell of the heel part.

Note 2 to entry: See Figure A.13.

3.2.9
instep point of last
point at the intersection between a plane and the highest point upper (dorsal) surface of the last

Note 1 to entry: See Figure A.15.

Note 2 to entry: There are three methods to define the plane:

— Method 1: perpendicular to the central line of the last bottom at 42 % of effective last length;

— Method 2: perpendicular to the central line of the last bottom ant 50 % of the foot length;

— Method 3: perpendicular to the last bottom at the point G1 (Figure A.14).

3.2.10
joint girth of last
ball girth of last
circumference around the last in the forepart corresponding to the approximate position of the ball joint of the foot

3.2.11
last length
sum of the bottom pattern *length of last* (3.2.1), *d*, measured along the surface of the bottom of the last, maximum of *heel curve of the last* (3.2.5), *a*, and hang over last top, *e*, with the last in its normal orientation

Note 1 to entry: See Figure A.6.

Note 2 to entry: The dimension, *e*, can be zero.

3.2.12
last toe height
maximum distance between the last bottom and the upper surface of the last measured on a line perpendicular to the last bottom plane and at the *effective last length* (3.2.3)

Note 1 to entry: See Figure A.11.

3.2.13
last toe spring
vertical distance between the underside of the last at the extreme toe end and the ground plane with the last in its normal orientation

Note 1 to entry: See Figure A.8.

3.2.14
long heel girth of last
girth t_2 from the point of the middle of the heel at the feather line, crossing the instep point, back to the heel point

Note 1 to entry: See Figure A.15.

3.2.15
stick last length
longest dimension of the last from the heel to the toe with the last in a flat position (without heel height)

Note 1 to entry: See Figure A.9.

3.2.16
toe allowance
addition to the *foot length* (3.1.4) that is necessary to accommodate the dynamic functioning of the foot

Note 1 to entry: See Figures A.2 and A.3.

3.2.17
tread width of the ball area of last
distance, *b*, between the maximum swell of the first metatarsal as a point of the last feather line and the maximum swell of the fifth metatarsal as a point of the last feather line

Note 1 to entry: See Figure A.12.

Note 2 to entry: There are different methods of measuring:

— Method 1: the *inside tangent* (3.1.6) and the parallel line touching the ball points of the last;

— Method 2: the inside and outside tangent lines which are parallel with the *central line of foot* (3.1.1) touching the two points;

— Method 3: this method uses the points E1 and F1 to find these points (Figure A.14).
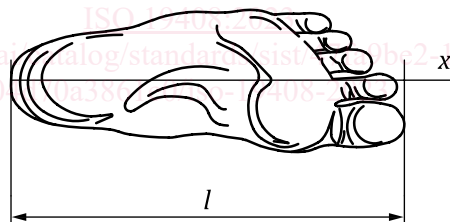
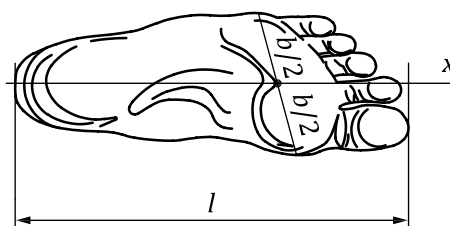# Annex A
(informative)

Figures
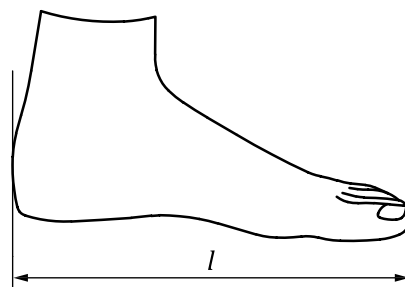
a) Foot length (method 1 and 2)
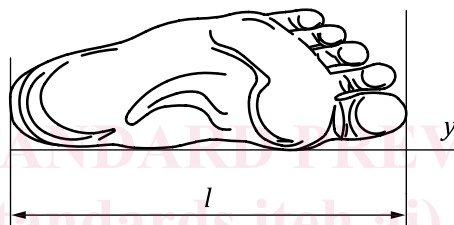
b) Foot length (method 1)

c) Foot length (method 2 a)

d) Foot length (method 2 b)

Key

x	central line	l	foot length
y	inside tangent	b	tread width of the foot

Figure A.1 — Foot length