

Footwear — Global last measurement systems

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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*.

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.

Introduction

Lasts are the base for footwear production. Standardization related to lasts can guide and regulate the design and production of lasts, thereby improving the fitting and comfort of footwear products.

This document ~~included~~includes partial information obtained from a survey carried out based on the Chinese population in relation to ~~standards of China~~GB/T 3293, the Chinese standard on lasts, which has undergone two revisions and has been implemented for over 40 years.

This technical report not only allows footwear traders, manufacturers, and other stakeholders from various countries to understand ~~the~~ last system, but also strengthens communication and cooperation in the design and standardization of lasts.

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Footwear — Global last measurement systems

1 Scope

This document ~~specifies~~**contains** the sizing of last systems for daily wear footwear including casual footwear, sports footwear and rain footwear.

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 19408, *Footwear — Sizing — Vocabulary*

~~ISO 19409, *Footwear — Sizing — Measurement of last dimensions*~~

4.3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 19408 and the following 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/>

~~4.13.1~~**3.1**

reference last

last with dimensions as reference size

~~Note 1 to entry: Table 1 gives reference size of each classification.~~

~~4.33.2~~**3.2**

last system

complete sizing system of lasts that is set by increasing or reducing with the specified interval based on the dimension of *reference last* [\(3.1\)](#)

~~Note 1 to entry: The last systems for different population and footwear types are given in Clause 6.~~

~~4.53.3~~**3.3**

regular reference dimensions

sizes that cannot be changed, such as the key points on the last bottom and ball girth

~~4.63.4~~**3.4**

variable reference dimensions

dimensions other than the *regular reference dimensions* [\(3.3 listed in this document\)](#)

5.4 Classification

Footwear size can be classified according to [Table 1](#)~~Table 1~~. ~~For each classification, reference sizes are given.~~

Table 1 — Footwear size with heel height classification

Dimensions in millimetres

Classification		Footwear size-(mm)			Heel height of last (mm)	
		Common size		Special size		
		Size range	Reference size			
Children’s footwear	Infants	90 ~to 125	110	—	—	
	Toddlers	130 ~to 170	150	—	—	
	Young children	175 ~to 205	190	—	—	
	Older children	210 ~to 250	225	Over 250	—	
Adults’ footwear	Female	215 ~to 250	235	Over 250	Flat	≤ 25
					Middle	30 ~to 50
					High	55 ~to 80
	Male	235 ~to 275	255	Over 275	Flat	≤ 20
					Middle	25 ~to 35
					High	40 ~to 50

6.5 Last dimensions

6.15.1 Last dimensions measurement

Measurement of last dimensions can be carried out ~~in~~ according ~~with~~ to ISO 19409.

6.2.5.2 Interval of last dimensions

6.2.15.2.1 Length grading interval

In practice, 10 mm intervals are commonly referred to as whole sizes, and 5 mm intervals as half sizes.

6.2.25.2.2 Ball girth grading interval

In practice, 7 mm intervals are commonly referred to as whole sizes, and 3,5 mm intervals as half sizes.

6.2.35.2.3 Width grading interval

In practice, 7 mm intervals are commonly referred to as whole sizes, and 3,5 mm intervals as half sizes.

6.2.45.2.4 Heel height grading interval

In practice, 5 mm intervals are commonly referred to as height grading, starting at 20 mm for male last and at 25 mm for female last.

6.3.5.3 Regular and variable reference dimensions

6.3.15.3.1 5.3.1—The lengths of key points on the last bottom and ball girth are regular reference dimensions.

6.3.25.3.2 5.3.2—The widths of key points on the last bottom (including inner width of big toe, outer width of little toe, inner width of first metatarsal, outer width of fifth metatarsal, tread width of heel, etc.) are regular reference dimensions, but half size up or down is allowed based on the width reference dimensions,

that is, the width of each part on the last bottom can be set at any value within the range of plus or minus half size.

~~6.3.3~~5.3.3 ~~5.3.3~~—The other dimensions of the last are variable.

6.45.4 Back of last

Regardless of style of toe design, the dimension of back of last behind the ball girth can remain unchanged for ~~the~~ last with the same type and same heel height.

6.55.5 Design allowance

~~6.5.1~~5.5.1 ~~5.5.1~~—Based on regular reference dimensions of the various length, girth and width on ~~the~~ last with the same footwear size and type, the design allowance can be added to the toe allowance.

~~6.5.2~~5.5.2 ~~5.5.2~~—The design can be based on regular and variable reference dimensions and other dimensions to achieve comfort and aesthetics of the footwear.

~~6.5.3~~5.5.3 ~~5.5.3~~—Design allowance can be variable as long as it does not affect wearing, but this does not apply to safety footwear and ~~children's~~children's footwear.

76 Last systems

6.1 General

This clause contains the last systems for male, female and children footwear, and for different footwear types.

7.16.2 Last system for male footwear

The dimensions of reference last for male footwear are given in Table 2~~Table 2-1~~ and Table 3~~Table 2-~~.

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Table 2 :

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Table 2-1 — Reference last dimensions of male footwear (lace-up footwear, tongue-type footwear and high-cut footwear)

Dimensions in millimetres

Last dimensions		Reference last dimensions-(mm)											
		Lace-up footwear				Tongue-type footwear				High-cut footwear			
		255 (2 ₄ 5)		255 (2 ₄ 5)		255 (2 ₄ 5)		255 (2 ₄ 5)		255 (2 ₄ 5)		255 (2 ₄ 5)	
		Size	Interval	Size	Interval	Size	Interval	Size	Interval	Size	Interval	Size	Interval
Length	Last bottom length	270,0	±5,0	270,0	±5,0	270,0	±5,0	270,0	±5,0	270,0	±0,5	270,0	±0,5
	Toe allowance	20,4	±0,4	20,4	±0,4	20,4	±0,4	20,4	±0,4	20,4	±0,4	20,4	±0,4
	Toe tip	249,9	±4,6	249,9	±4,6	249,6	±4,6	249,6	±4,6	249,6	±4,6	249,6	±4,6
	Swell point of big toe	224,2	±4,2	224,2	±4,2	224,2	±4,2	224,2	±4,2	224,2	±4,2	224,2	±4,2
	Swell point of little toe	193,6	±3,6	193,6	±3,6	193,6	±3,6	193,6	±3,6	193,6	±3,6	193,6	±3,6
	Position of 1 st metatarsal	179,6	±3,0	179,6	±3,0	179,6	±3,3	179,6	±3,3	179,6	±3,3	179,6	±3,3
	Landing point of forefoot	170,5	±3,2	170,5	±3,2	170,5	±3,2	170,5	±3,2	170,5	±3,2	170,5	±3,2
	Position of 5 th metatarsal	156,7	±2,9	156,7	±2,9	156,7	±2,9	156,7	±2,9	156,7	±2,9	156,7	±2,9
	Landing point of total toe spring	153,0	±2,8	153,0	±2,8	153,0	±2,8	153,0	±2,8	153,0	±2,8	153,0	±2,8
	Waist	99,3	±1,8	99,3	±1,8	99,3	±1,8	99,3	±1,8	99,3	±1,8	99,3	±1,8
	Center Centre of heel area	40,8	±0,8	40,8	±0,8	40,8	±0,8	40,8	±0,8	40,8	±0,8	40,8	±0,8
	Maximum of heel curve	5,1	±0,1	5,1	±0,1	5,1	±0,1	5,1	±0,1	5,1	±0,1	5,1	±0,1
Girth	Ball girth	243,0	±3,5	243,0	±3,5	239,5	±3,5	239,5	±3,5	246,5	±3,5	246,5	±3,5
	Instep girth	245,0	±3,6	245,0	±3,6	239,5	±3,5	239,5	±3,5	251,6	±3,6	251,6	±3,6
Width	Stick width of ball area	88,8	±1,3	88,8	±1,3	87,5	±1,3	87,5	±1,3	90,1	±1,3	90,1	±1,3
	Tread width of ball area	90,0	±1,3	90,0	±1,3	88,7	±1,3	88,7	±1,3	91,3	±1,3	91,3	±1,3
	Inner width of big toe	34,1	±0,5	34,1	±0,5	33,6	±0,5	33,6	±0,5	34,6	±0,5	34,6	±0,5

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Last dimensions		Reference last dimensions (mm)											
		Lace-up footwear				Tongue-type footwear				High-cut footwear			
		255 (2 $\frac{1}{2}$)		255 (2 $\frac{1}{2}$)		255 (2 $\frac{1}{2}$)		255 (2 $\frac{1}{2}$)		255 (2 $\frac{1}{2}$)		255 (2 $\frac{1}{2}$)	
		Size	Interval	Size	Interval	Size	Interval	Size	Interval	Size	Interval	Size	Interval
	Outer width of little toe	51,7	±0,7	51,7	±0,7	51,0	±0,7	51,0	±0,7	52,4	±0,7	52,4	±0,7
	Inner width of 1 st metatarsal	36,0	±0,5	36,0	±0,5	35,5	±0,5	35,5	±0,5	36,5	±0,5	36,5	±0,5
	Outer width of 5 th metatarsal	52,8	±0,8	52,8	±0,8	52,0	±0,8	52,0	±0,8	53,6	±0,8	53,6	±0,8
	Outer width of waist	40,0	±0,6	40,0	±0,6	39,4	±0,6	39,4	±0,6	40,6	±0,6	40,6	±0,6
	Tread width of heel	60,5	±0,9	60,5	±0,9	59,6	±0,9	59,6	±0,9	61,4	±0,9	61,4	±0,9
Height	Heel height of last	5.3.1											
Height	Heel height of last ^a	15,0	±0,2	25,0	±0,2	15,0	±0,2	25,0	±0,2	15,0	±0,2	25,0	±0,4
	Toe spring	18,5	±0,2	17,5	±0,2	18,5	±0,2	17,5	±0,2	18,5	±0,2	17,5	±0,2
	Total toe spring	26,0	±0,3	32,0	±0,3	26,0	±0,3	32,0	±0,3	26,0	±0,3	32,0	±0,5
Other	Toe height	21,0	±0,3	21,0	±0,3	21,0	±0,3	21,0	±0,3	21,0	±0,3	21,0	±0,3
	Height of maximum of heel curve	22,7	±0,3	22,7	±0,3	22,7	±0,3	22,7	±0,3	22,7	±0,3	22,7	±0,3
	Back height	75,0	±1,0	75,0	±1,0	75,0	±1,0	75,0	±1,0	101,4	±1,4	101,4	±1,4
	Convexity of ball area	5,0	±0,1	5,0	±0,1	5,0	±0,1	5,0	±0,1	5,0	±0,1	5,0	±0,1
	Concavity of waist	5,5	±0,1	6,5	±0,1	5,5	±0,1	6,5	±0,1	5,5	±0,1	6,5	±0,6
	Convexity of heel area	4,0	—	4,0	—	4,0	—	4,0	—	4,0	—	4,0	—
	Width of top line	26,0	±0,4	26,0	±0,4	26,0	±0,4	26,0	±0,4	30,0	±0,4	30,0	±0,4
	Length of top line	102,0	±1,9	102,0	±1,9	101,0	±1,9	101,0	±1,9	112,1	±2,1	112,1	±2,1

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	Diagonal length of last	269,9	±5,0	268,5	±5,0	269,9	±5,0	268,5	±5,0	282,7	±5,2	282,7	±5,2
NOTE Design allowance of last can be determined based on the toe shape of last. ^a <u>The classification and range of heel height of last are given in Table 1.</u>													

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