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Performance evaluation protocol for digital fitting systems —

Part 2:
Virtual garment

Protocole d'évaluation de la performance des systèmes d'habillage virtuel —

Partie 2: Vêtement virtuel

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Contents

Page

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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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 133, *Clothing sizing systems — size designation, size measurement methods and digital fittings*.

A list of all parts in the ISO 20947 series can be found on the ISO website.

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

The use of the digital fitting system, employed to evaluate the suitability of real garments on real human body with the use of virtual garments on a virtual human body in cyberspace, is growing in popularity. The system eliminates the need for physical garment production with fabric in product evaluation. Using computer-generated virtual garment pattern, virtual garment is created and tested on either a virtual human body or a virtual fit mannequin (fit form). The technology is expected to improve garment fit and increase productivity. It benefits not only those engaged in garment design but also consumers at the time of garment purchase, with better fit and wider choice of sizes in mass-produced products. Such system is useful for designers, manufacturers, educationalists because the system helps to improve the fit of garments and productivity.

Digital fitting technology is still developing, and there is a wide range of differences in the specification and performance between digital fitting systems. This makes it difficult for users to select an appropriate system for their purposes.

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Performance evaluation protocol for digital fitting systems —

Part 2:
Virtual garment

1   Scope

This document specifies a method for describing the functions and the method for evaluating the performance of the virtual garment pattern cutting and clothing simulation modules of digital fitting systems. This document is applicable to fashion designers and pattern technologists (makers) for generating virtual garment patterns, and testing them on a virtual fit mannequin (fit form).

2   Normative references

There are no normative references in this document.

3   Terms and definitions

For the purposes of this document, the following terms and definitions 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/

3.1   General

3.1.1
digital fitting system
simulation of a virtual garment pattern or virtual garment over a *virtual fit mannequin (fit form)* (3.1.2) providing qualitative and/or quantitative evaluation of the fit through analysis of the distribution of, among other things, surface strain, gap between body and garment, tension map, cross section, surface wrinkles, garment balance

3.1.2
virtual fit mannequin (fit form)
model used for draping and examining silhouette and fit of a garment in a virtual space used for digital fitting

3.1.3
virtual garment
three-dimensional clothing in digital form that exists in virtual space

3.1.4
virtual garment pattern
shapes consisting of straight lines and closed curves that mark the area of a digitized pattern used on the *virtual garment* (3.1.3)

Note 1 to entry: Each pattern consists of a contoured and multiple internal lines, which are used to express seams, internal openings, fold lines, and other garment characteristics.

3.1.5
clothing simulation
creation and drape simulation of a virtual garment on the virtual human body using a *virtual garment pattern* (3.1.4), virtual sewing and bounding volume

3.1.6
material properties
physical properties of material, including tensile modulus, bending rigidity, shear resistance, thickness, weight

Note 1 to entry: These can be simulated for virtual fabrics using cloth simulation models.

Note 2 to entry: See Annex C.

3.1.7
sewing information
information necessary to construct a virtual garment from virtual garment patterns, including seam lines, specific points on a virtual garment pattern such as positions of snaps, hooks, and buttons, notch marks, grain line, and layer information
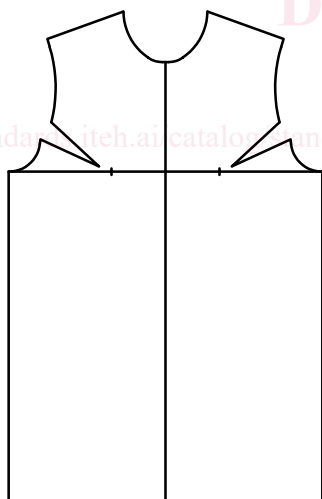
3.2 Lines on virtual pattern and their lengths
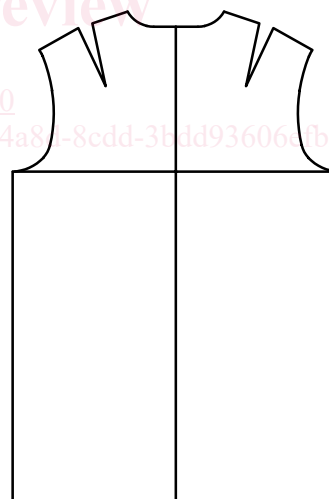
3.2.1 Upper pattern

3.2.1.1
hem line
line at the hem of front bodice or back bodice

Note 1 to entry: See Figure 1. Length of the front hem line, length of back hem line, and total length are measured.

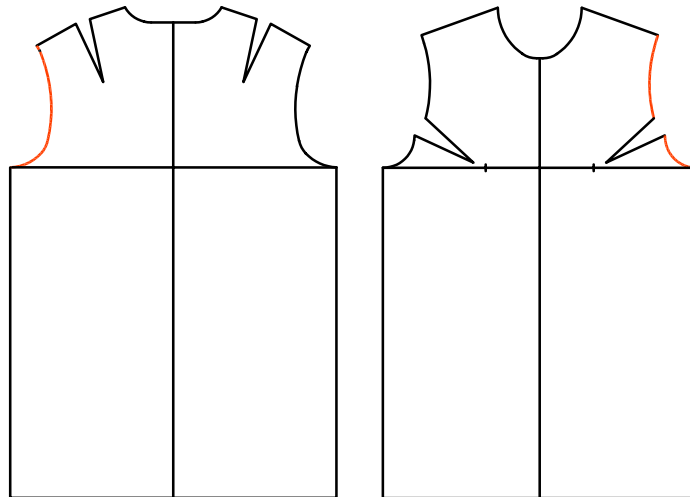a) **Front hem line of front bodice**   b) **Back hem line of back bodice**
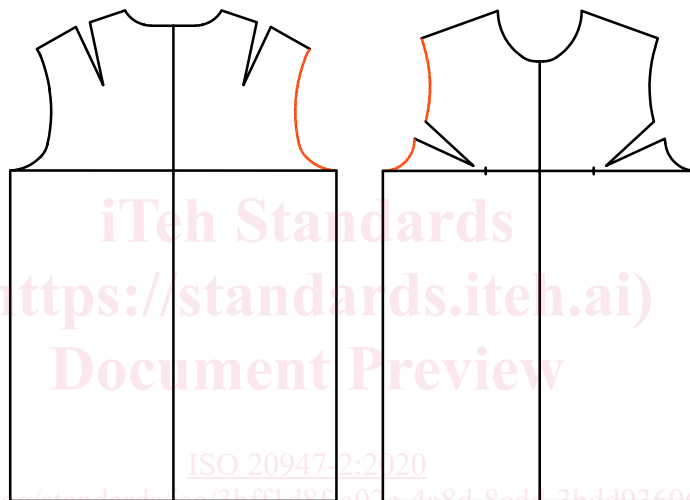
Figure 1 — Hem line

3.2.1.2
armhole line
line at the left and right armhole of front bodice or back bodice

Note 1 to entry: See Figure 2. Length of armhole lines, and total length of armhole lines of front bodice and back bodice are measured.

a) Left armhole line of front bodice or back bodice

b) Right armhole line of front bodice or back bodice

Figure 2 — Armhole line

3.2.1.3
sleeve width line
straight line connecting the two ends of a line sewing front bodice and back bodice (left or right)

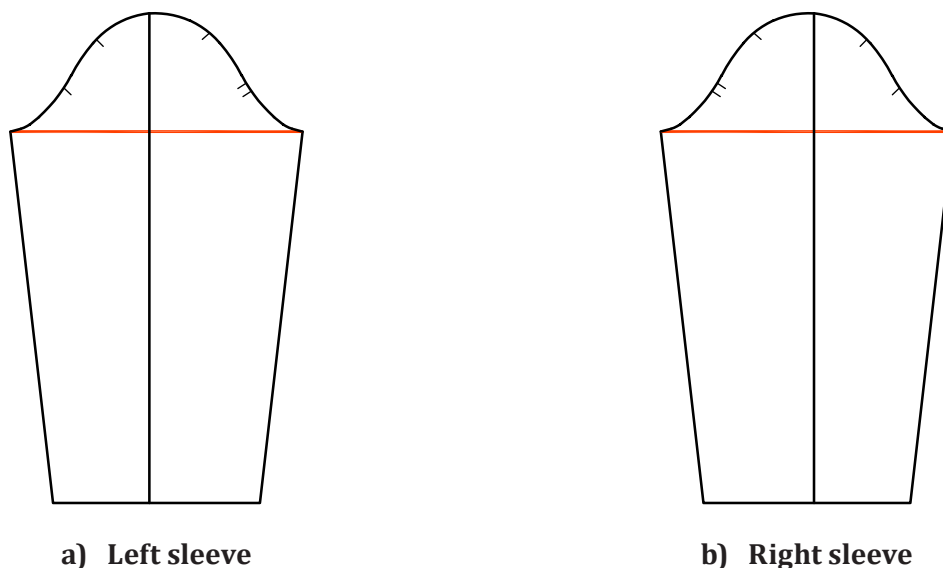Note 1 to entry: See Figure 3. Length of right or left sleeve width line is measured.

a) Left sleeve **b) Right sleeve**

Figure 3 — Sleeve width line

3.2.1.4
sleeve length line
straight line passing the top of the line sewing front bodice and back bodice and perpendicular to sleeve width line (bicep line) (left or right)

Note 1 to entry: See Figure 4. Length is measured from the top of the sleeve crown seam line to sleeve hem line of the right or left sleeve.
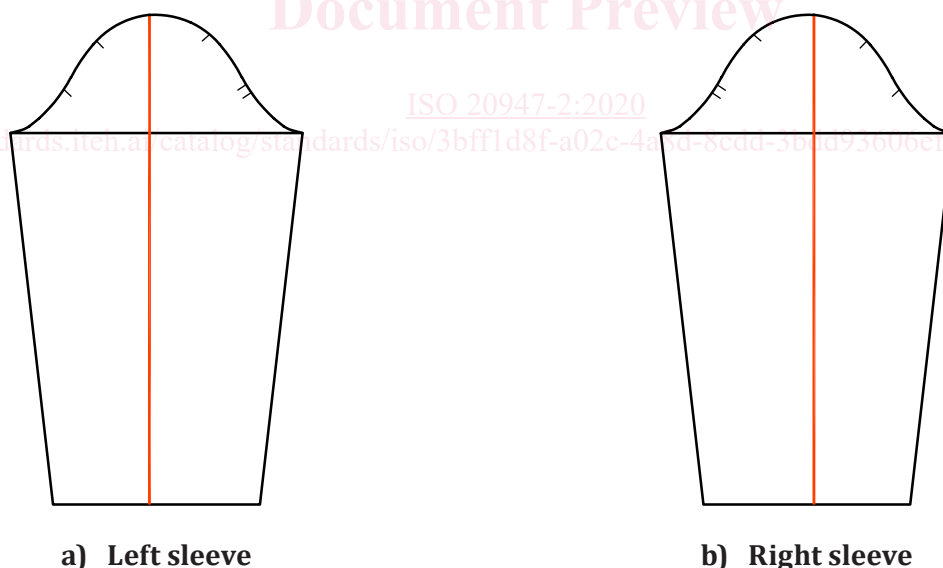

a) Left sleeve **b) Right sleeve**

Figure 4 — Sleeve length line

3.2.1.5
underarm seam line
lines connecting the edge of line sewing front bodice and back bodice and edge of sleeve hem line along which a sleeve is stitched to make a tube (left or right)

Note 1 to entry: See Figure 5. Length is measured from the edge of line sewing front bodice and back bodice to the edge of sleeve hem line of the right or left sleeve. Either line of the left or right sleeve is measured because they are the same length.
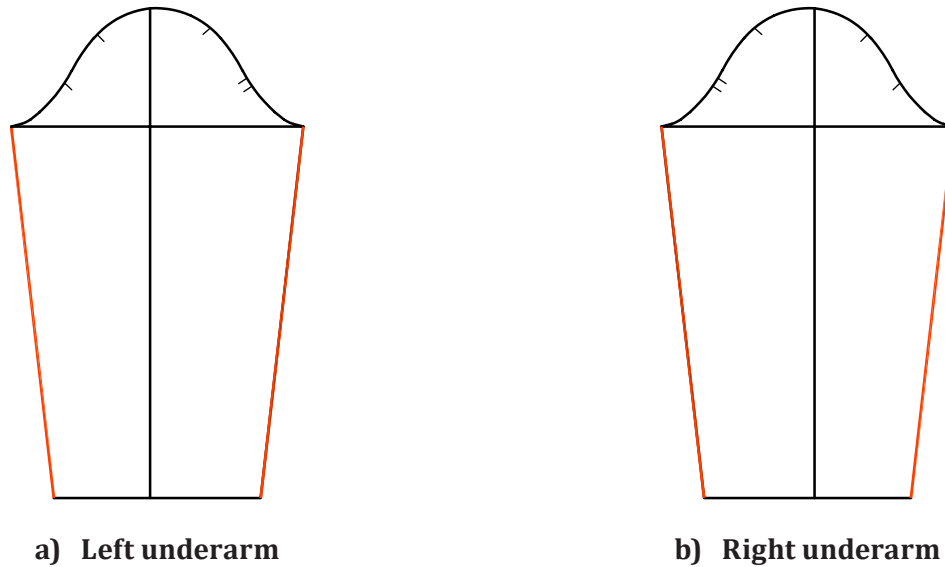
a) Left underarm   b) Right underarm

Figure 5 — Underarm seam line

3.2.1.6
sleeve hem line
line at the lower edge of the sleeve pattern indicating the hem (left or right)

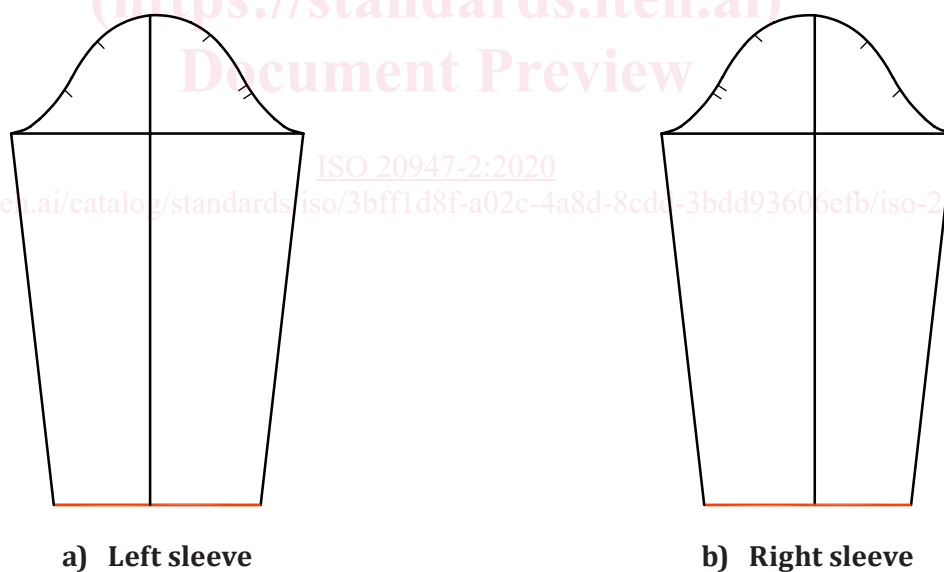Note 1 to entry: See Figure 6. Length is measured for the right or left sleeve hem line.

a) Left sleeve   b) Right sleeve

Figure 6 — Sleeve hem line

3.2.2   Upper pattern and one-piece dress

3.2.2.1
bust line
straight line passing the level of the breast point of the pattern and

— perpendicular to the front centre line of the front bodice from the left side line to the right side line (front bust line), or