
Size designation of clothes —

Part 1:

**Anthropometric definitions for body
measurement**

Désignation des tailles de vêtements —

Partie 1: Définitions anthropométriques pour la mesure du corps

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html

The committee responsible for this document is ISO/TC 133, *Clothing sizing systems — Size designation, size measurement methods and digital fittings*.

This first edition cancels and replaces ISO 3635:1981 and ISO 8559:1989, which have been technically revised.

A list of all parts in ISO 8559 can be found on the ISO website.

Introduction

This document is the first of a three-part International Standard (ISO 8559-1, ISO 8559-2 and ISO 8559-3). It comprises the definition and generation of anthropometric measurements that can be used for the creation of size and shape profiles and their application in the field of clothing. It forms a foundation for ISO 8559-2, *Primary and secondary dimension indicators*, and ISO 8559-3, *Methodology for creating body measurement tables and intervals*. Reference is made to measurements and procedures in ISO 7250-1.

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Size designation of clothes —

Part 1:

Anthropometric definitions for body measurement

1 Scope

This document provides a description of anthropometric measurements that can be used as a basis for the creation of physical and digital anthropometric databases. The list of measurements specified in this document is intended to serve as a guide for practitioners in the field of clothing who are required to apply their knowledge to select population market segments and to create size and shape profiles for the development of all garment types and their equivalent fit mannequins. The list provides a guide for how to take anthropometric measurements, as well as give information to clothing product development teams and fit mannequin manufacturers on the principles of measurement and their underlying anatomical and anthropometrical bases.

[Annex A](#) describes the use of the pictogram (standardized and modified) based on the selection of most usual body dimensions used for clothing size designation.

This document is intended to be used in conjunction with national, regional or international regulations or agreements to ensure harmony in defining population groups and to allow comparison of anthropometric data sets.

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:

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

NOTE [Annex C](#) summarizes the mapping of the terms related to body landmark points, levels (3.1) and lines and planes (3.2) with listed measurements:

- [Table C.1](#) — Vertical measurements (5.1), breadths, widths and depths (5.2);
- [Table C.2](#) — Girth measurements (5.3);
- [Table C.3](#) — Distances measured following the surface of the body (5.4);
- [Table C.4](#) — Other measurements (5.6), calculated measurements (5.7).

3.1 Landmark points and levels ([Figures 1 to 26](#))

NOTE See [Annex C](#) for mapping of points and levels to measurements.

3.1.1

shoulder point

most lateral point of the lateral edge of the spine (acromial process) of the scapula, projected vertically to the surface of the skin

Note 1 to entry: See [Figure 1](#).

Note 2 to entry: Identical to acromion in ISO 7250-1.

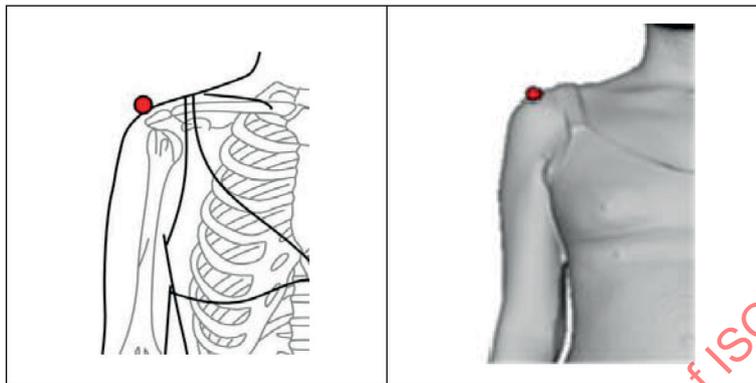


Figure 1 — Shoulder point

3.1.2

centre point of brow ridge

most anterior point of the forehead between the brow ridges in the mid-sagittal plane

Note 1 to entry: See [Figure 2](#).

Note 2 to entry: Identical to Glabella in ISO 7250-1.

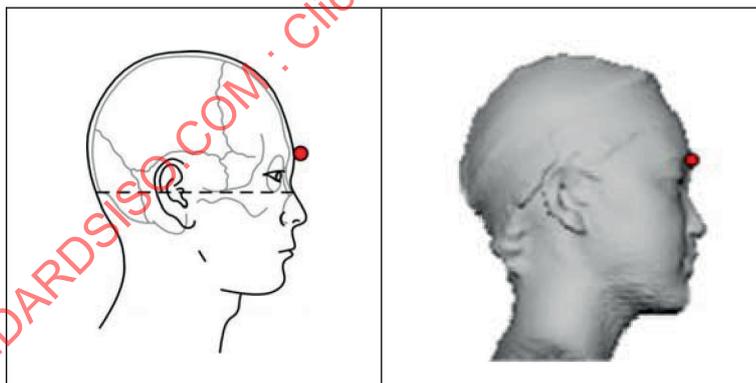


Figure 2 — Centre point of brow ridge

3.1.3

tragion

point of the notch just above the tragus (the small cartilaginous flap in front of the ear hole)

Note 1 to entry: See [Figure 3](#).

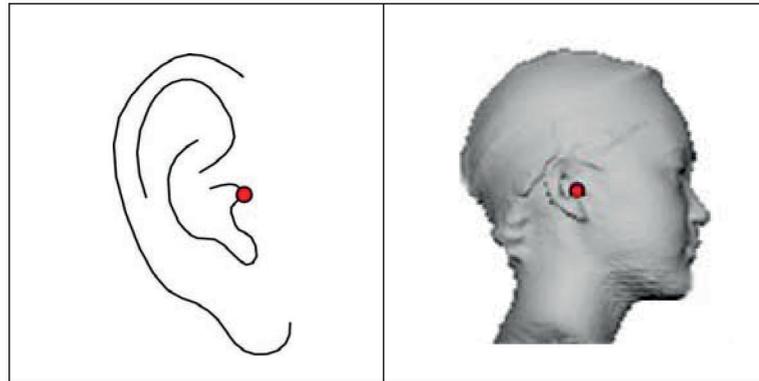


Figure 3 — Tragion

3.1.4 orbitale

lowest point of the lower border of the orbital margin (lower edge of the eye socket)

Note 1 to entry: See [Figure 4](#).

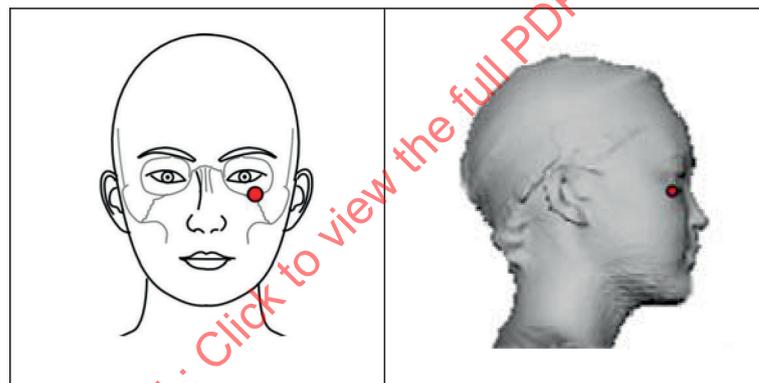


Figure 4 — Orbitale

3.1.5 lowest point of chin

lowest point of the tip of the chin in the midsagittal plane, projected anteriorly when the head is held in the Frankfurt plane

Note 1 to entry: See [Figure 5](#).

Note 2 to entry: Identical to menton in ISO 7250-1.

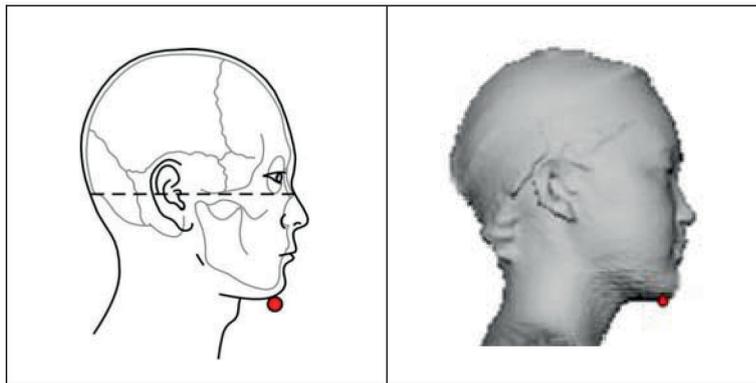


Figure 5 — Lowest point of chin

3.1.6

back neck point

tip of the prominent bone at the base of the back of the neck (spinous process of the seventh cervical vertebra) in the mid-sagittal plane, and projected posteriorly to the surface of the skin

Note 1 to entry: See [Figure 6](#).

Note 2 to entry: Identical to cervicale in ISO 7250-1.

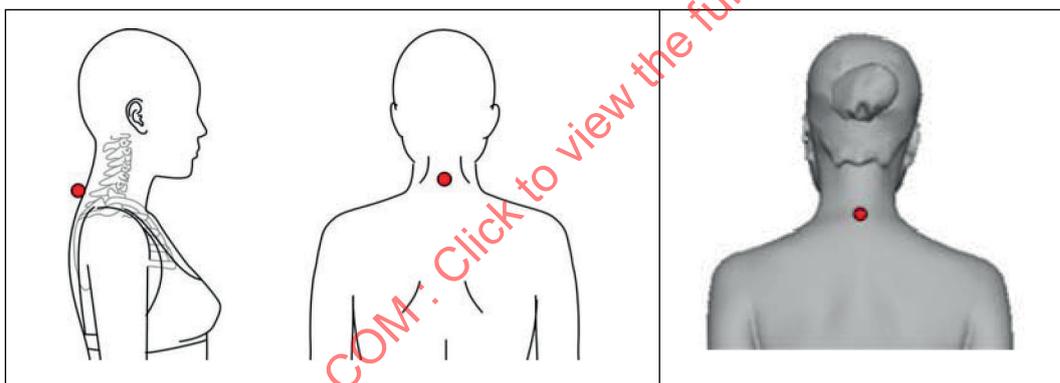


Figure 6 — Back neck point

3.1.7

side neck point

crossing point of the neck base line and the anterior border of the trapezius muscle

Note 1 to entry: See [Figure 7](#).

Note 2 to entry: Side neck points are determined when locating neck base line ([3.2.1](#)).

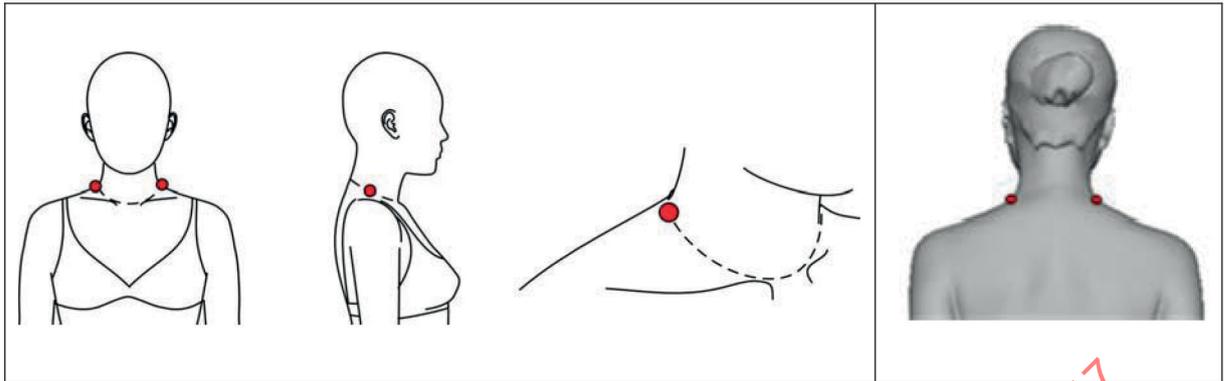


Figure 7 — Side neck point

3.1.8 front neck point

crossing point of the line connecting medial superior borders of the left and right clavicles and front median line

Note 1 to entry: See [Figure 8](#).

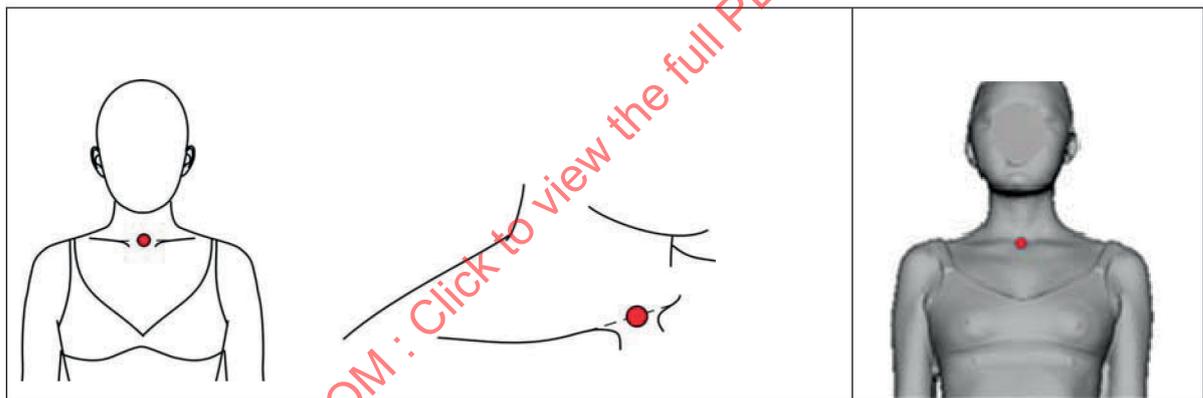


Figure 8 — Front neck point

3.1.9 'Adam's apple' point

most anterior point of the thyroid cartilage

Note 1 to entry: See [Figure 9](#).

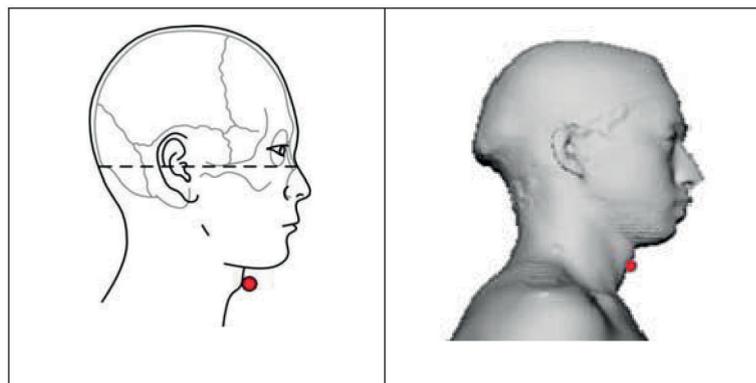


Figure 9 — 'Adam's apple' point

3.1.10

elbow point

most prominent point of the olecranon of ulna

Note 1 to entry: See [Figure 10](#).

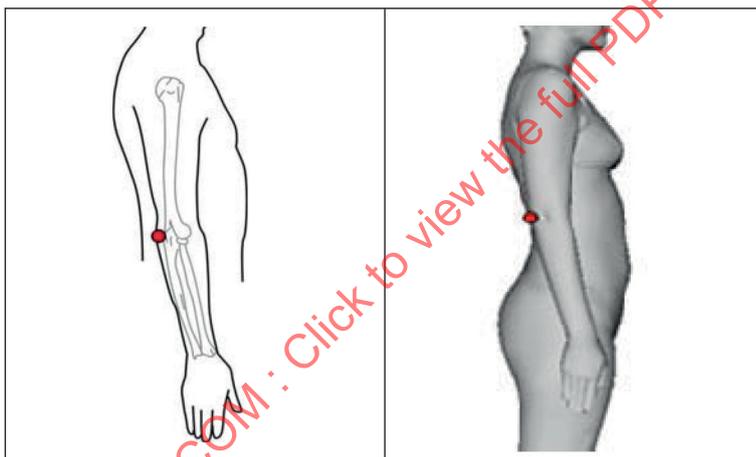


Figure 10 — Elbow point

3.1.11

bust point

most anterior point of the bust when wearing bra

Note 1 to entry: See [Figure 11](#).

Note 2 to entry: For information relating to type of bra to be worn, see [4.1.1](#).

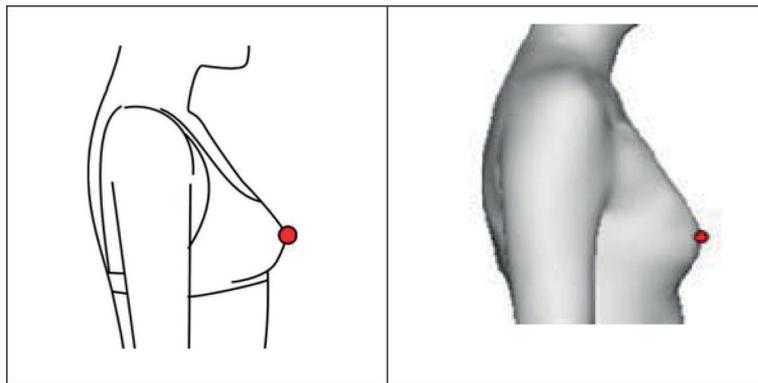


Figure 11 — Bust point

3.1.12 centre chest point

point on the union of the third and fourth sternebrae, in the midsagittal plane

Note 1 to entry: See [Figure 12](#).

Note 2 to entry: Identical to mesosternale in ISO 7250-1.

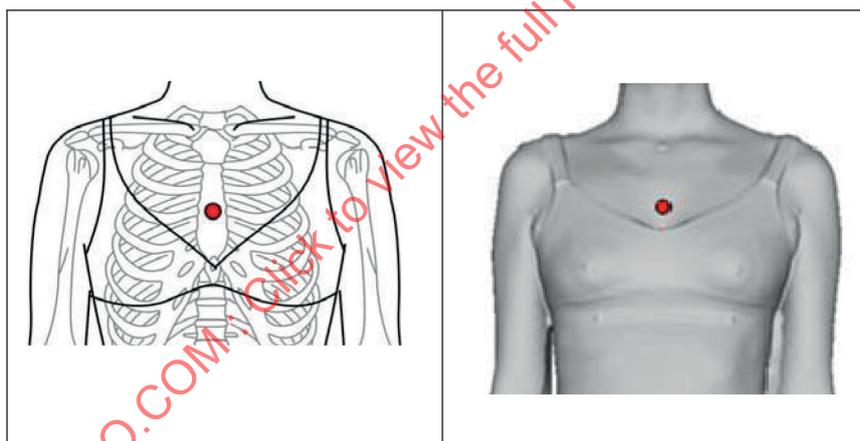


Figure 12 — Centre chest point

3.1.13 armpit front fold point

front fold point of the armpit on arm scye line determined using a scale placed under arm

Note 1 to entry: The level is decided as the upper edge of a rule placed under the armpit.

Note 2 to entry: See [Figure 13](#).

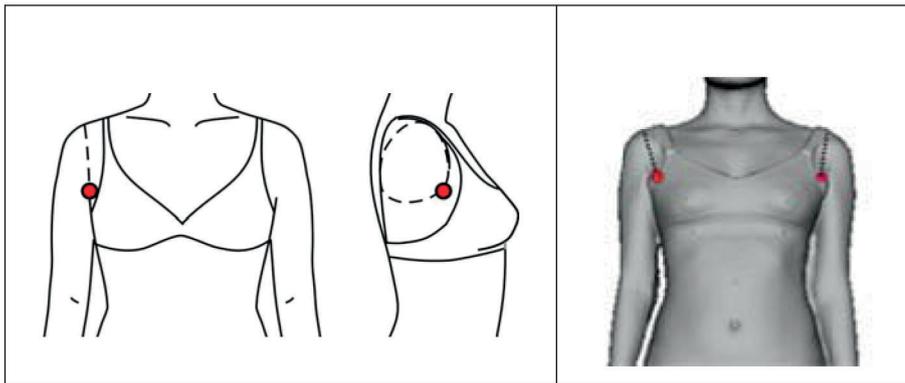


Figure 13 — Armpit front fold point

3.1.14
armpit back fold point

back fold point of the armpit on arm scye line determined using a scale placed under arm

Note 1 to entry: The level is decided as the upper edge of a rule placed under the armpit.

Note 2 to entry: See [Figure 14](#).

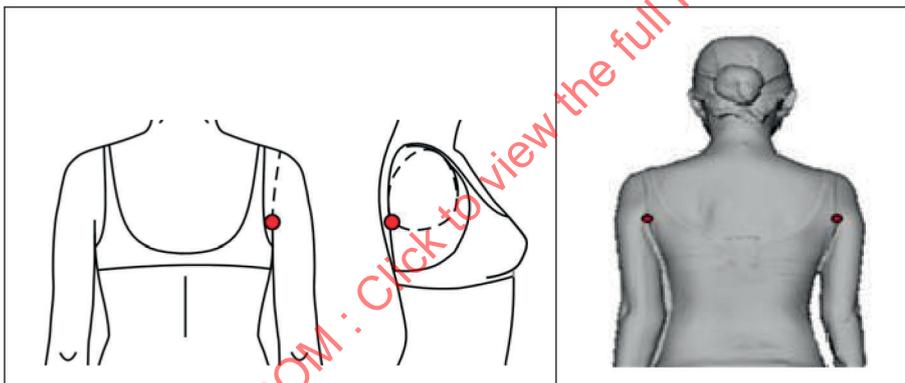


Figure 14 — Armpit back fold point

3.1.15
lowest rib point

inferior point of the bottom of the rib cage (tenth rib) projected horizontally, 45° from the midsagittal plane, to the surface of the skin

Note 1 to entry: See [Figure 15](#).

Note 2 to entry: Identical to lowest point of rib cage in ISO 7250-1.

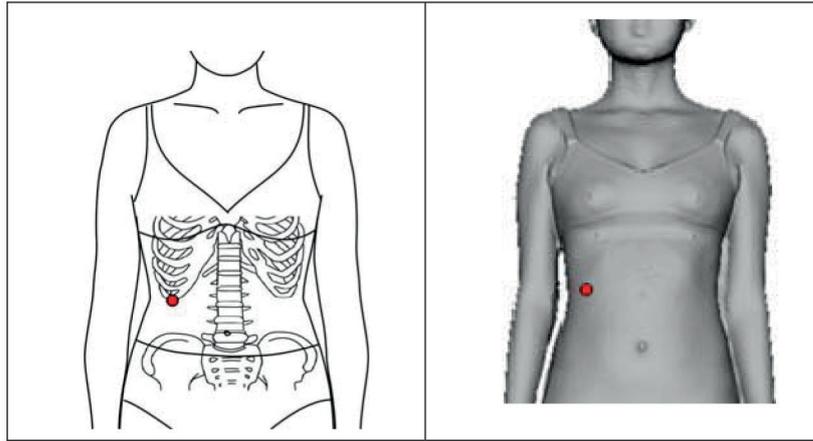


Figure 15 — Lowest rib point

3.1.16

highest point of the hip bone

highest point at the side of the upper border of the iliac crest

Note 1 to entry: See [Figure 16](#).

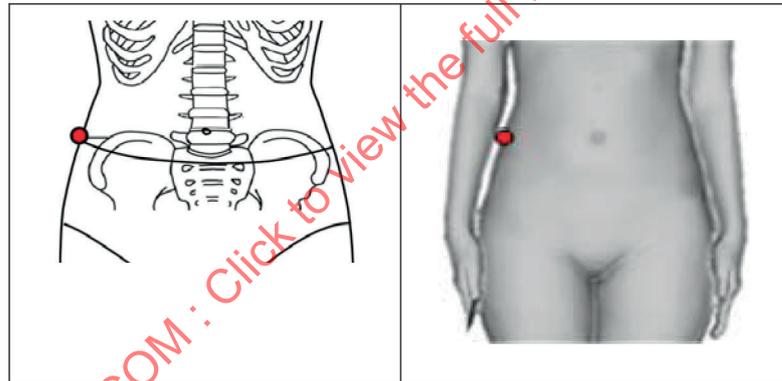


Figure 16 — Highest point of the hip bone

3.1.17

centre point of kneecap

centre of patella when the thigh muscles are relaxed

Note 1 to entry: See [Figure 17](#).

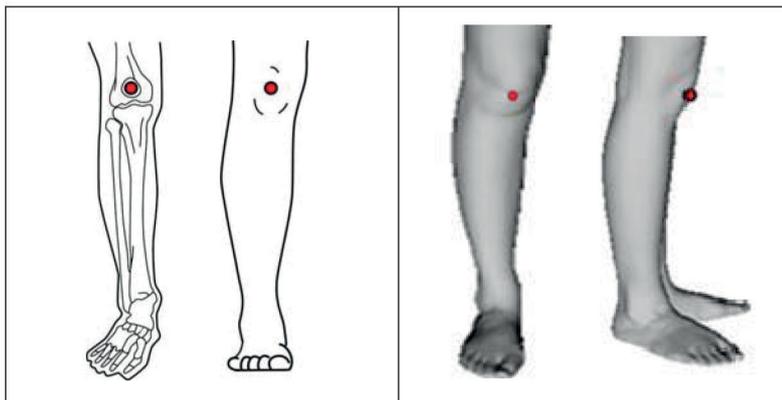


Figure 17 — Centre point of kneecap

3.1.18

outer ankle point

most lateral point of the outer ankle bone (lateral malleolus)

Note 1 to entry: See [Figure 18](#).

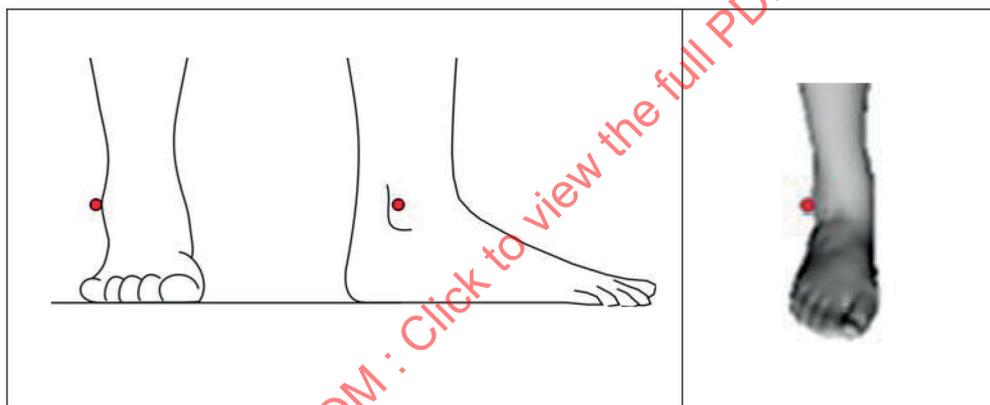


Figure 18 — Outer ankle point

3.1.19

wrist point

most prominent point of the bulge of the head of ulna (prominent bone at the little finger side of the wrist)

Note 1 to entry: See [Figure 19](#).

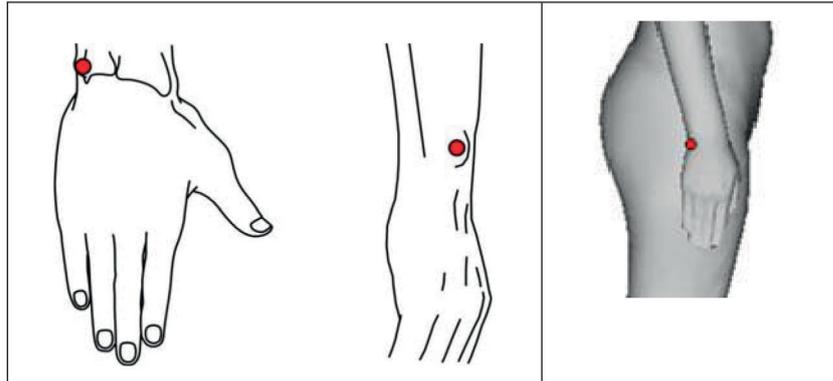


Figure 19 — Wrist point

3.1.20 under bust level

level directly below breast when wearing a bra

Note 1 to entry: See [Figure 20](#).

Note 2 to entry: For information relating to type of bra to be worn, see [4.1.1](#).

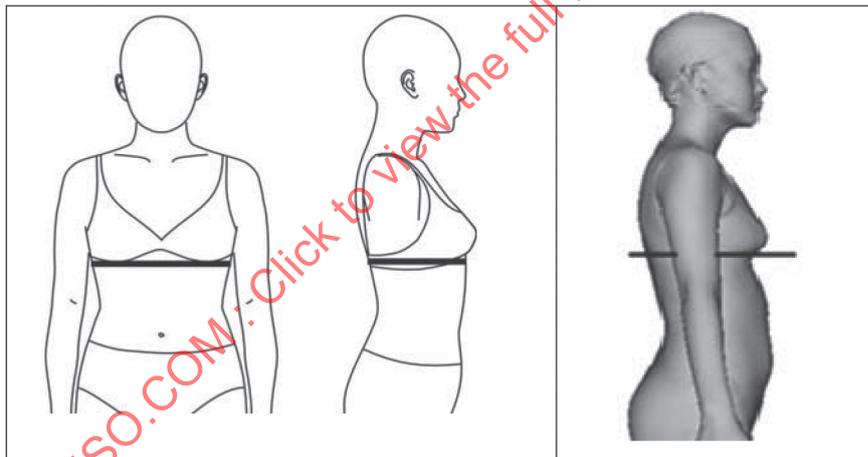


Figure 20 — Under bust level

3.1.21 midriff level

midway between the under-bust and waist levels

Note 1 to entry: See [Figure 21](#).

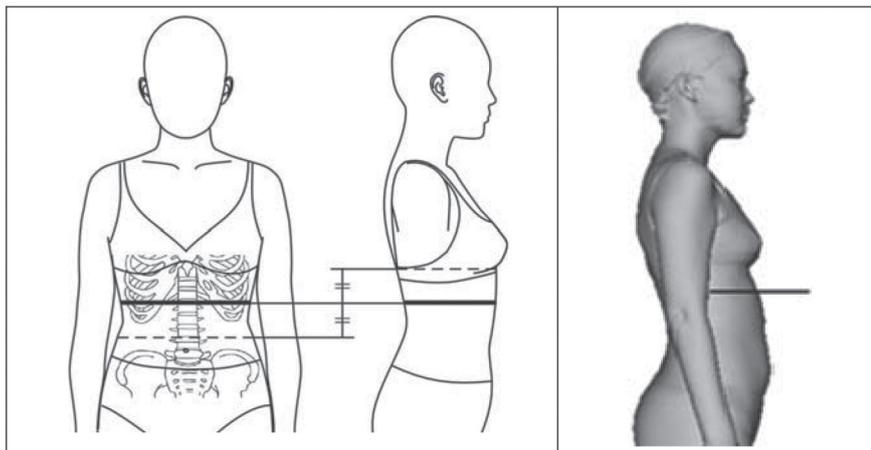


Figure 21 — Midriff level

**3.1.22
waist level**

midway between the lowest rib point and the highest point of the hip bone at the side of the body

Note 1 to entry: See [Figure 22](#).

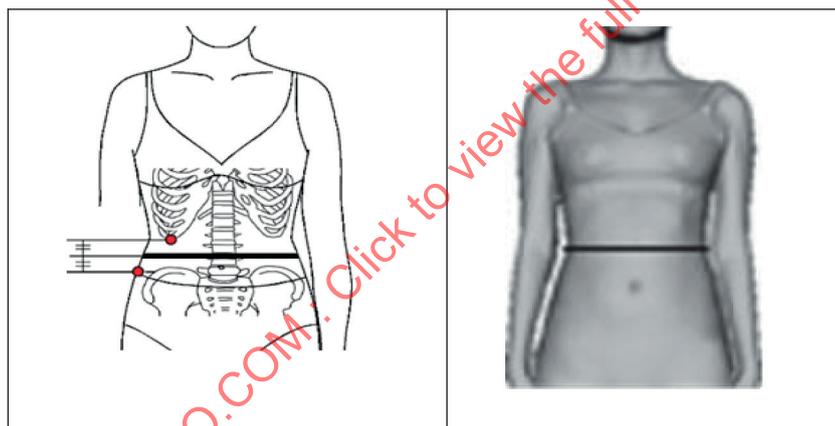


Figure 22 — Waist level

**3.1.23
upper hip level**

midway between the top-hip and waist levels

Note 1 to entry: See [Figure 23](#).

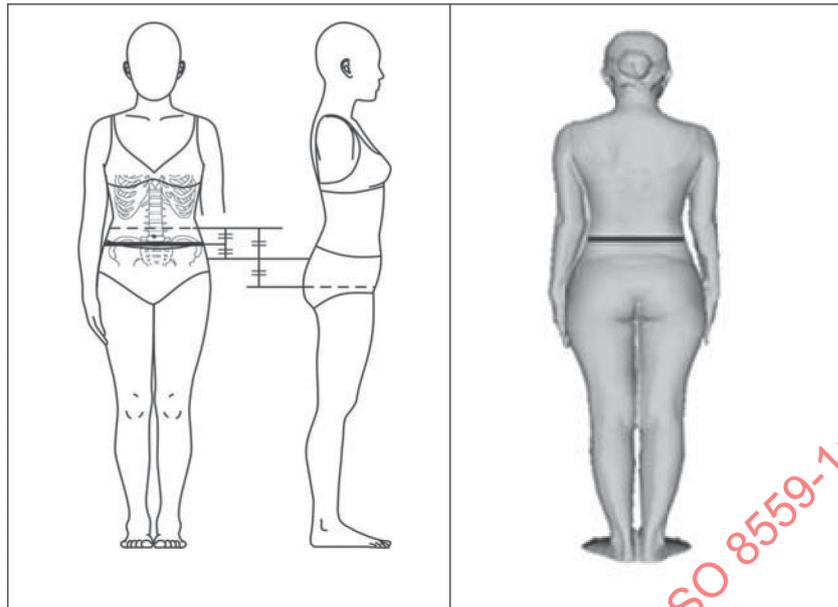


Figure 23 — Upper hip level

3.1.24**top hip level**

midway between the waist level and hip level

Note 1 to entry: See [Figure 24](#).

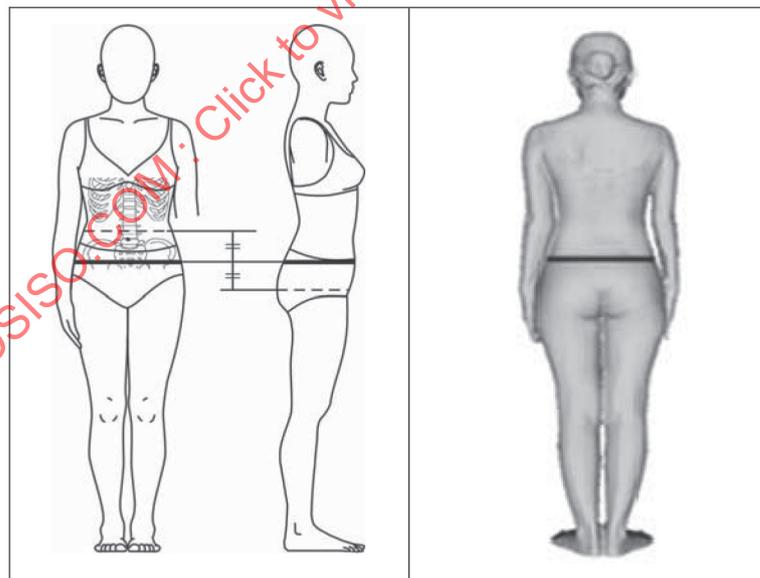


Figure 24 — Top hip level

3.1.25**hip level**

level of the greatest projection at the back of the body (buttocks)

Note 1 to entry: See [Figure 25](#).

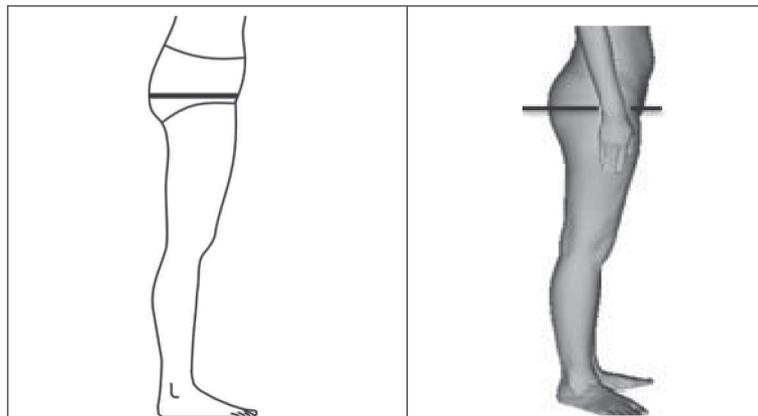


Figure 25 — Hip level

3.1.26

inside leg level

level of highest visible point at the junction between the right and left thighs observed from the back of subject

Note 1 to entry: See [Figure 26](#).

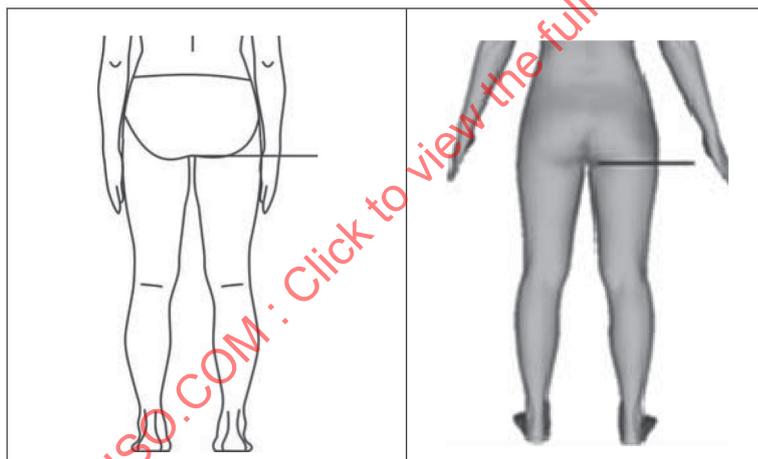


Figure 26 — Inside leg level

3.2 Lines and planes ([Figures 27 to 31](#))

NOTE See [Annex C](#) for mapping of lines and planes to measurements.

3.2.1

neck base line

line at the neck base defined using a chainette that passes back neck point and the front neck point

Note 1 to entry: See [Figure 27](#).

Note 2 to entry: Side neck points ([3.1.7](#)) are determined when locating the neck base line.

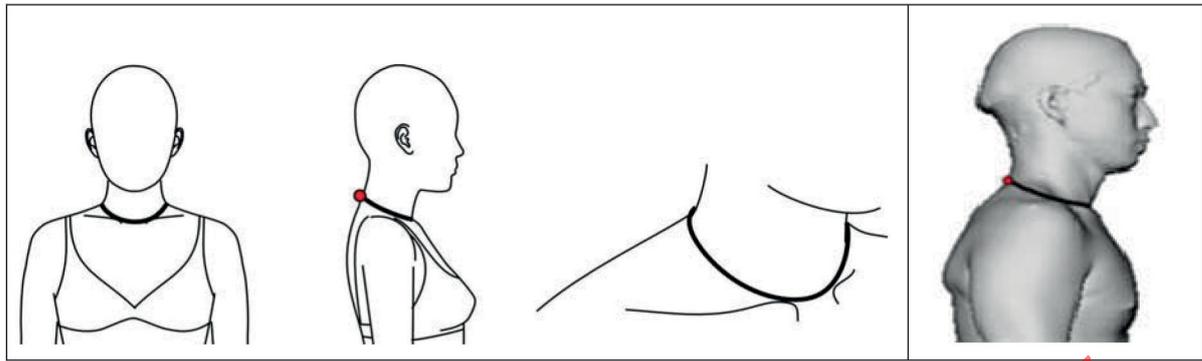


Figure 27 — Neck base line

3.2.2

shoulder line

line connecting side neck point and shoulder point

Note 1 to entry: See [Figure 28](#).

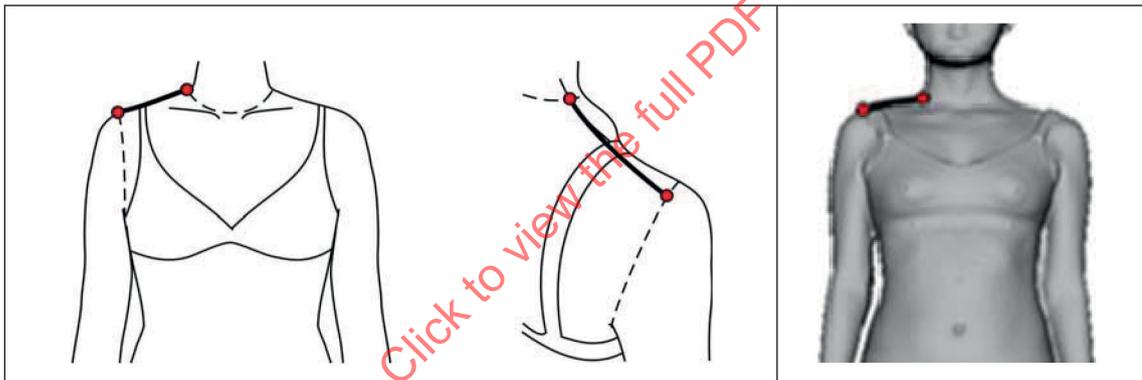


Figure 28 — shoulder line

3.2.3

armscye line

line passing the shoulder point and under the arm defined using a chainette or narrow tape

Note 1 to entry: See [Figure 29](#).

Note 2 to entry: Armpit front fold point ([3.1.13](#)) and armpit back fold point ([3.1.14](#)) are determined when locating armscye line.

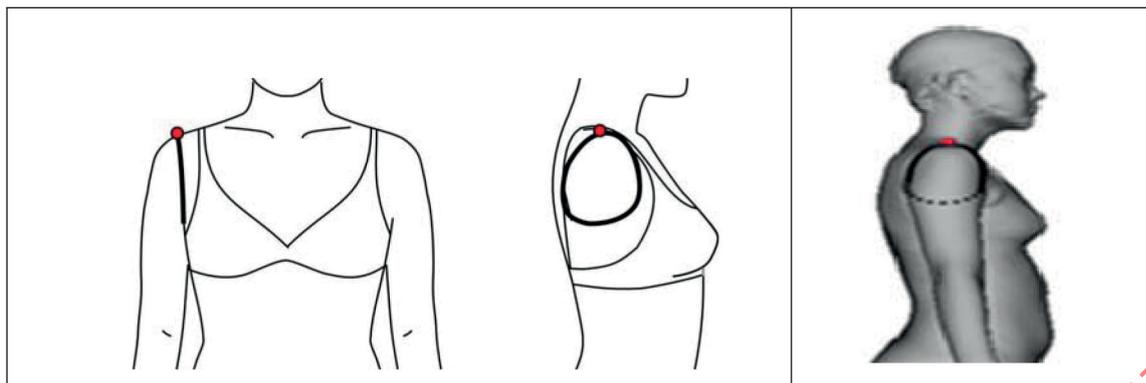


Figure 29 — Armscye line

3.2.4

midsagittal plane

antero-posterior (front to back) median plane of the body

Note 1 to entry: See [Figure 30](#).

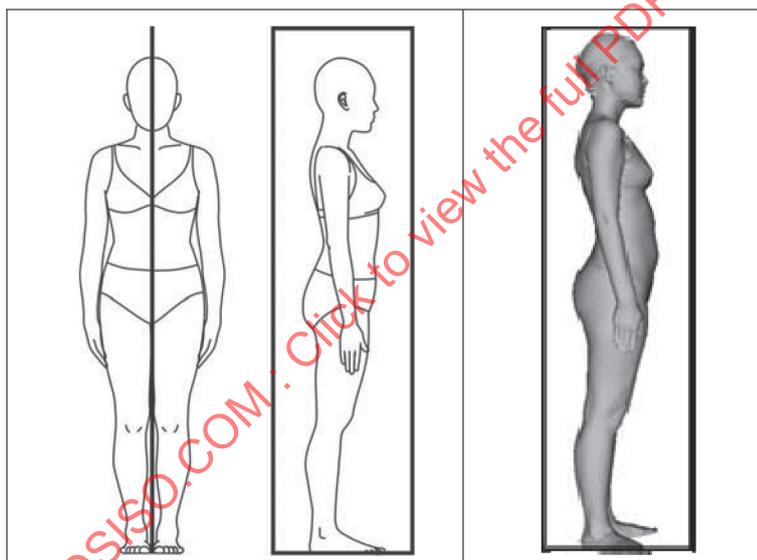


Figure 30 — Midsagittal plane

3.2.5

Frankfurt plane

standard horizontal plane at the level of the left tragon, upper border of the cartilaginous flap in front of the ear hole (tragus), and the left orbitale, the lower border of the orbital margin, when the midsagittal plane of the head is held vertically

Note 1 to entry: See [Figure 31](#).

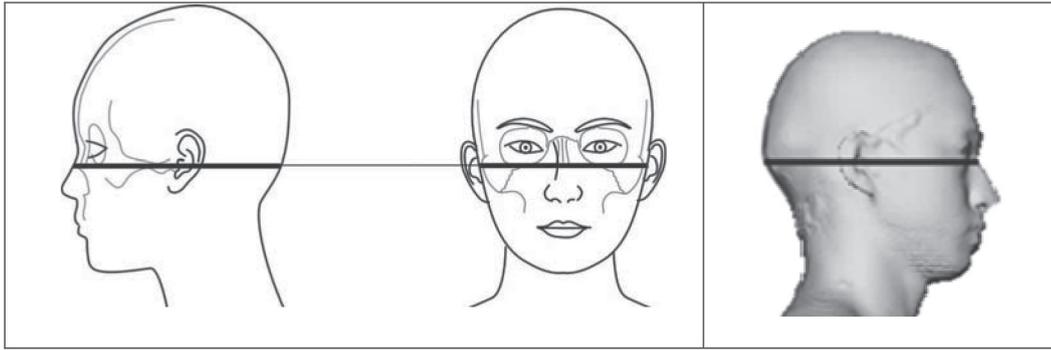


Figure 31 — Frankfurt plane

4 Measuring conditions and equipment

4.1 Conditions and apparatus

4.1.1 Clothing of subject

Measure the body without shoes and in body fitting clothing without bagginess or folds. Bra and briefs are worn to ensure maintenance of ethical practice but, when determining bust girth, it is important to select a bra that does not impact on the measurement of the breast. Bras need to be well fitting, unpadded classic brassiere made of light material without other supports.

Types of attire can affect the measurement of the breast. Therefore, the types of bras worn shall be recorded.

NOTE Different body morphologies can make some measurements difficult to acquire e.g. under bust.

4.1.2 Support surfaces

Standing surfaces and sitting surfaces shall be flat, horizontal and not compressible.

4.1.3 Body symmetry

For measurements which may be taken on either side of the body, it should be indicated on which side the measurement was taken.

4.1.4 Posture

[Annex B](#) describes the standing and seated postures with arm positions related to the measuring conditions).

Standing posture one: the subject stands erect with feet together, weight distributed equally on both feet, shoulders relaxed. The head is orientated in the Frankfurt plane (see [Figure B.1](#)).

Standing posture two: the subject stands with feet placed shoulder width apart, weight distributed equally on both feet, shoulders relaxed. The head is orientated in the Frankfurt plane (see [Figures B.2](#) and [B.3](#)).

Seated posture: the subject sits erect with head in the Frankfurt plane. The thighs are parallel to each other with a 90° angle between the torso and thigh and thigh and lower leg. Feet can be supported or legs can hang freely (see [Figure B.4](#)).

Arm position:

- Hanging freely downwards (see [Figure B.1](#));
- Abducted to form a 20° angle with the side of the body (see [Figure B.2](#));
- Bent with fist placed on hip bone (see [Figure B.3](#));
- Bent at a 90° angle (see [Figure B.4](#)).

4.1.5 Other requirements

All measurements are taken with the subject breathing normally.

Other requirements specific to each body dimension are described under each body dimension.

All the measurements except weight and angular measurements shall be recorded to the nearest millimetre.

4.2 Equipment

All equipment should be calibrated and/or verified for accuracy both before and during use.

4.2.1 Anthropometer

Consisting essentially of a rule, graduated in millimetres, and with a movable arm (cursor), used to measure height.

4.2.2 Tape measure

Dimensionally stable and accurately graduated in millimetres. Recommended width is between 5 mm and 10 mm, depending on the size of measurement. The tape measure is used to measure girth and surface distance measurements. Apply moderate tension to the tape measure (but ensure that the body is not constricted by the tape).

4.2.3 Chainette and narrow tape

A chainette consisting of a fine metallic chain can be used for defining the base of the neck. Neck base girth can be measured using a chainette and rule. A narrow tape can be used for defining the armscye or waist line.

4.2.4 Large sliding caliper, sliding caliper and spreading caliper

Used for measuring the breadth and depth of the body segments, as well as the distances between reference marks.

4.2.5 Weighing scale

Capable of determining body mass accurate to 100g.

4.2.6 Inclinator

Graduated in degrees, capable of determining shoulder slope. Inclinator is used to measure shoulder slope.

NOTE Other methods of measuring the body, such as a 3-dimensional body scanner, can be used. Measurements obtained by these methods need to be either /or:

- as accurate as, and comparable with, the measurements obtained by the prescribed manual methods [the comparability should be evaluated according to ISO 20685 (all parts)];

- used for measurements that can be obtained using traditional manual methods but are no longer ethically acceptable.

5 Basic body measurements

5.1 Vertical measurements (Figures 32 to 49)

NOTE See [Table C.1](#) for mapping of vertical measurements to points, levels ([3.1](#)), lines and planes ([3.2](#)).

5.1.1 Stature

Definition: Vertical distance from the highest point of the head in the median line to the ground (see [Figure 32](#)).

Position: Subject stands erect with the feet together and head in the Frankfurt plane.

Equipment: Anthropometer.

Note 1 Identical to stature (body height) in ISO 7250-1.

Note 2 The term 'height' is commonly used and covers both stature ([5.1.1](#)) and recumbent length ([5.1.2](#)).

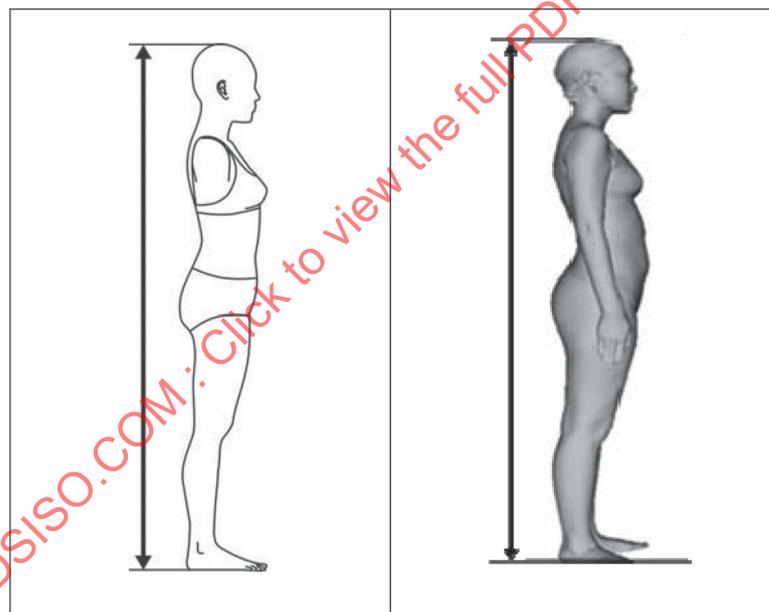


Figure 32 — Stature

5.1.2 Recumbent length

Definition: Horizontal distance from the vertical plate to which the soles touch to the crown of the head in the median line (see [Figure 33](#)).

Position: Subject lies on a table with the soles touching a vertical plate. Frankfurt plane is perpendicular to the laying surface.

Equipment: Anthropometer.

NOTE The term 'height' is commonly used and covers both stature ([5.1.1](#)) and recumbent length ([5.1.2](#)).

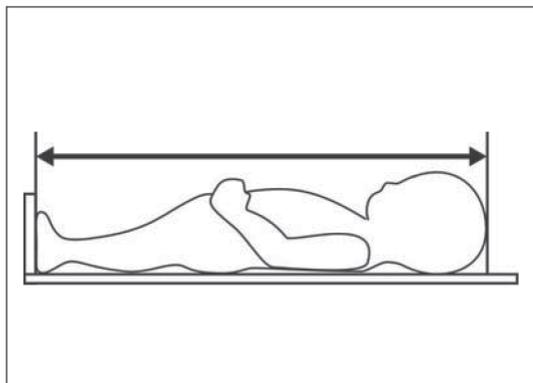


Figure 33 — Recumbent length

5.1.3 Chin height

Definition: Vertical distance from the lowest point of chin to the ground (see [Figure 34](#)).

Position: Subject stands erect with feet together and head in the Frankfurt plane.

Equipment: Anthropometer.

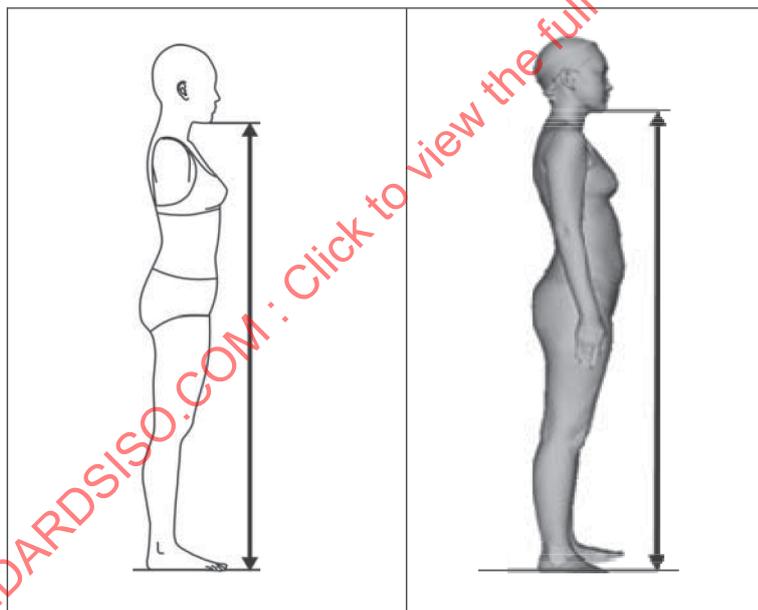


Figure 34 — Chin height

5.1.4 Front neck height

Definition: Vertical distance from front neck point to the ground (see [Figure 35](#)).

Position: Subject stands erect with feet together and head in the Frankfurt plane.

Equipment: Anthropometer.

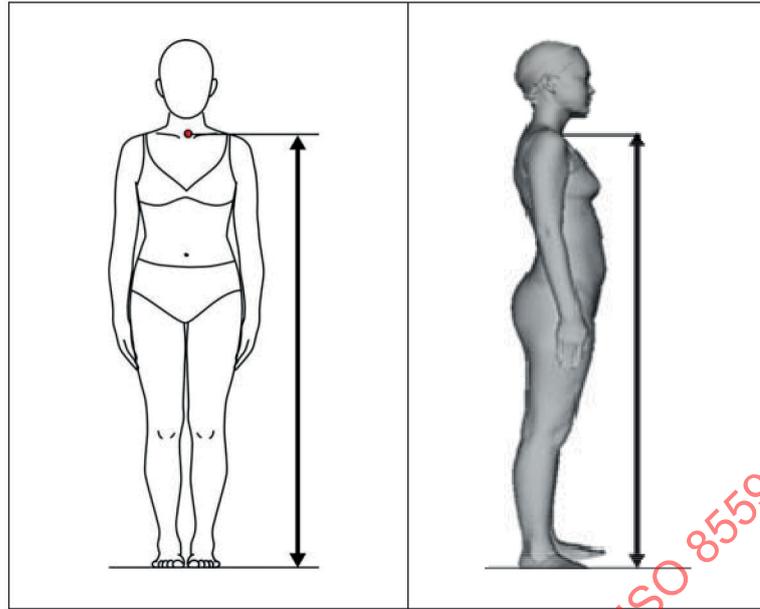


Figure 35 — Front neck height

5.1.5 Back neck height

Definition: Vertical distance from back neck point to the ground (see [Figure 36](#)).

Position: Subject stands erect with feet together and head in the Frankfurt plane.

Equipment: Anthropometer.

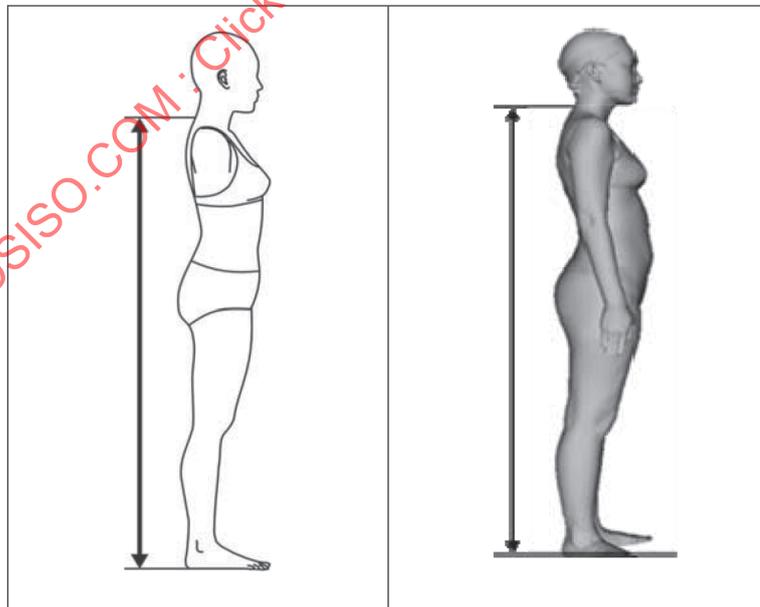


Figure 36 — Back neck height

5.1.6 Chest height

Definition: Vertical distance from armpit back fold point to the ground (see [Figure 37](#)).

Position: Subject stands erect with feet together and head in the Frankfurt plane.

Equipment: Anthropometer.

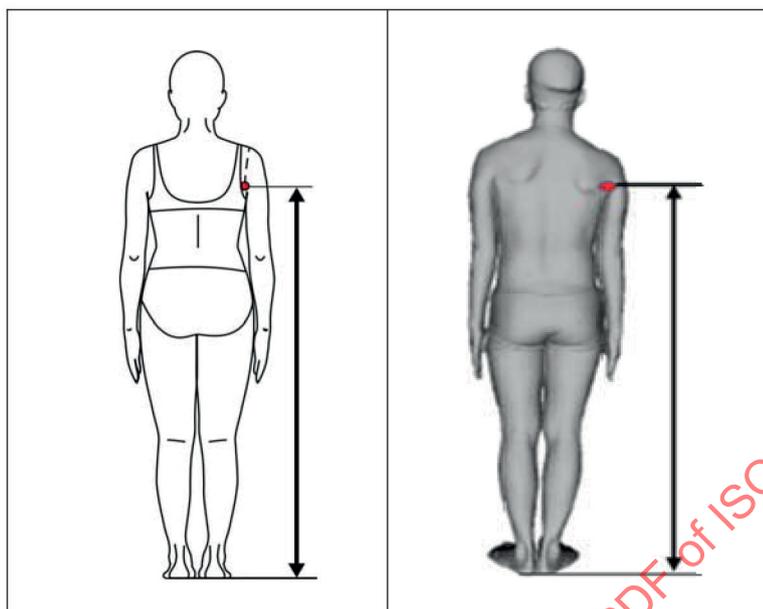


Figure 37 — Chest height

5.1.7 Bust height

Definition: Vertical distance from the bust point to the ground (see [Figure 38](#)).

Position: Subject stands erect with feet together and head in the Frankfurt plane.

Equipment: Anthropometer.

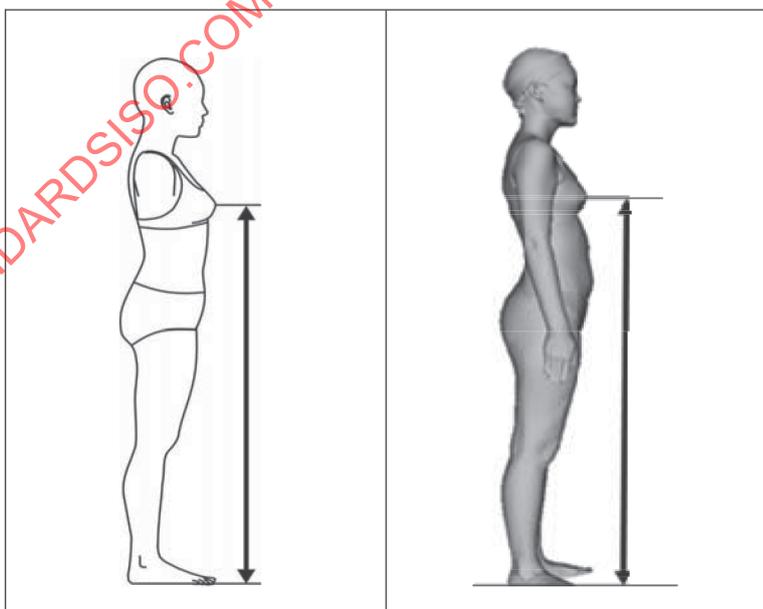


Figure 38 — Bust height

5.1.8 Under bust height

Definition: Vertical distance from the under-bust level to the ground (see [Figure 39](#)).

Position: Subject stands erect with feet together and head in the Frankfurt plane.

Equipment: Anthropometer.

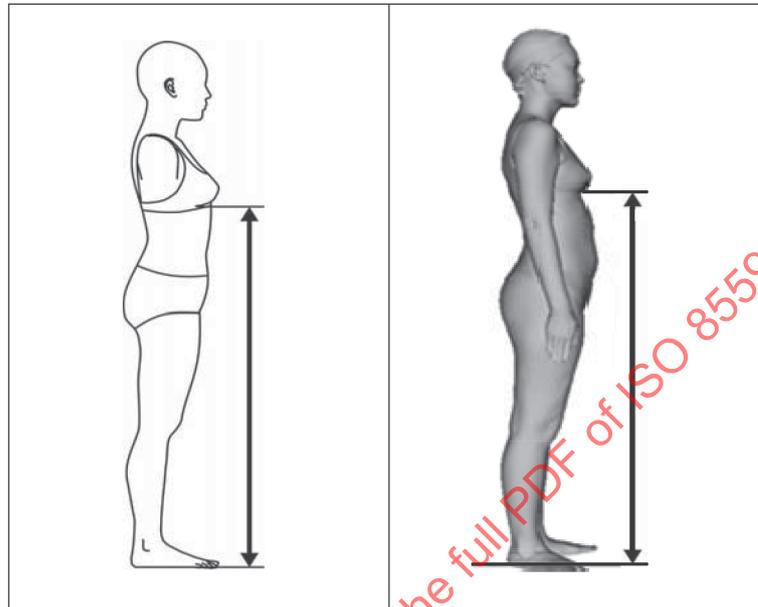


Figure 39 — Under bust height

5.1.9 Midriff height

Definition: Vertical distance from the midriff level to the ground (see [Figure 40](#)).

Position: Subject stands erect with feet together and head in the Frankfurt plane.

Equipment: Anthropometer.

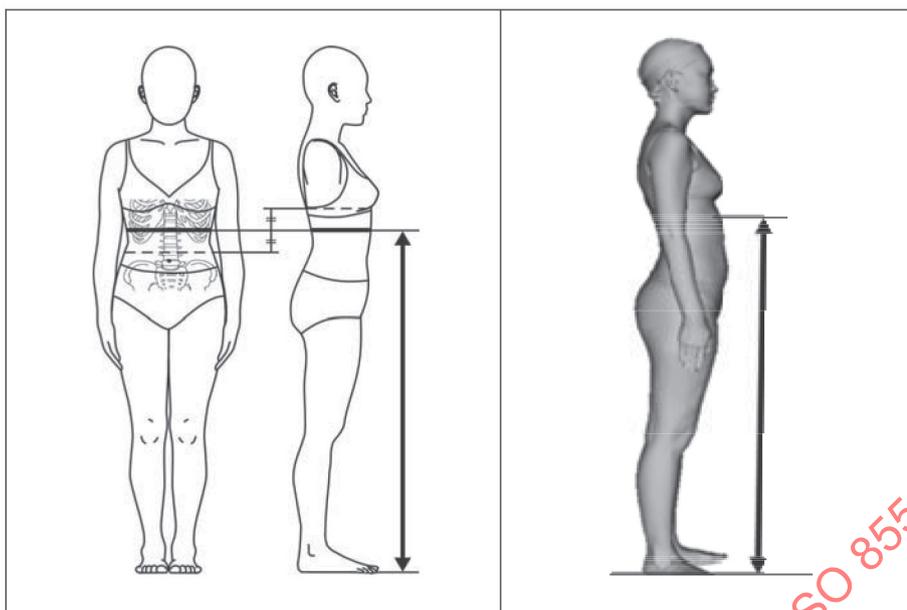


Figure 40 — Midriff height

5.1.10 Waist height

Definition: Vertical distance from the waist level to the ground (see [Figure 41](#)).

Position: Subject stands erect with feet together and abdomen relaxed.

Equipment: Anthropometer.

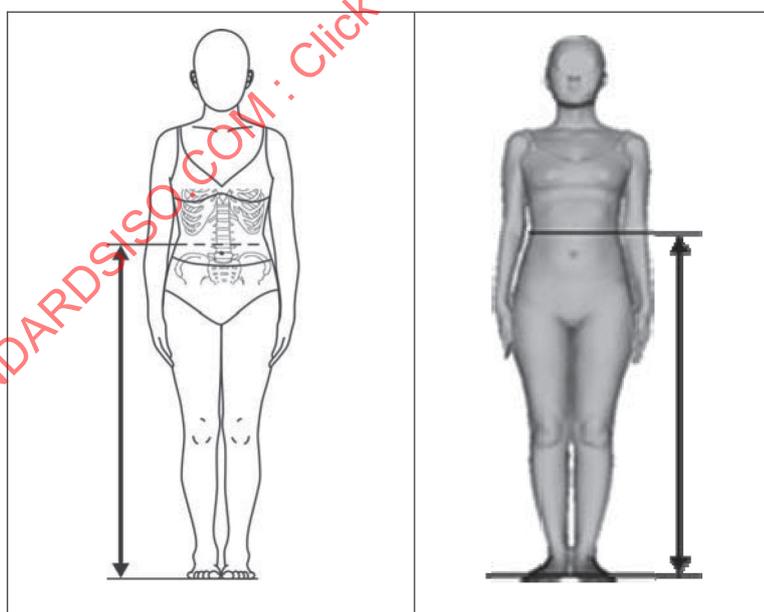


Figure 41 — Waist height

5.1.11 Upper hip height

Definition: Vertical distance from the upper hip level to the ground (see [Figure 42](#)).

Position: Subject stands fully erect with feet together.

Equipment: Anthropometer.

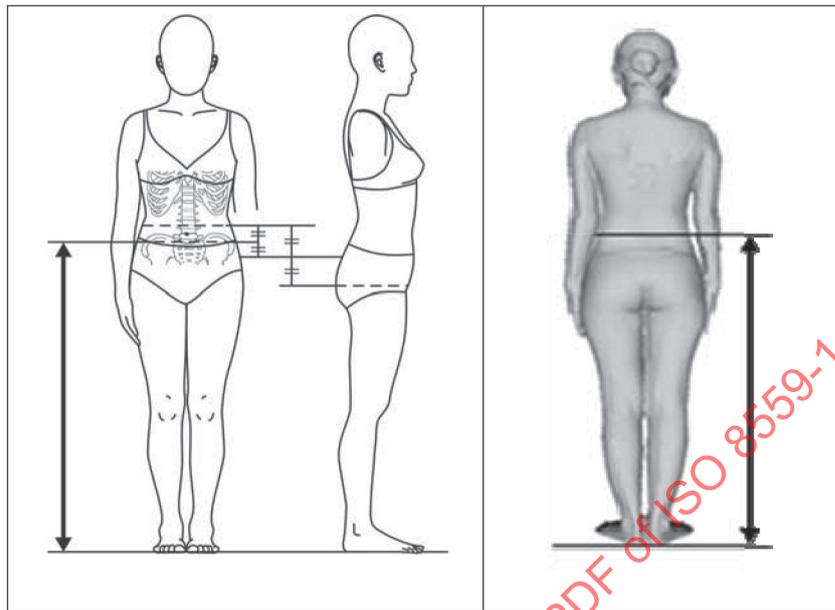


Figure 42 — Upper hip height

5.1.12 Top hip height

Definition: Vertical distance from the top hip level to the ground (see [Figure 43](#)).

Position: Subject stands fully erect with feet together.

Equipment: Anthropometer.

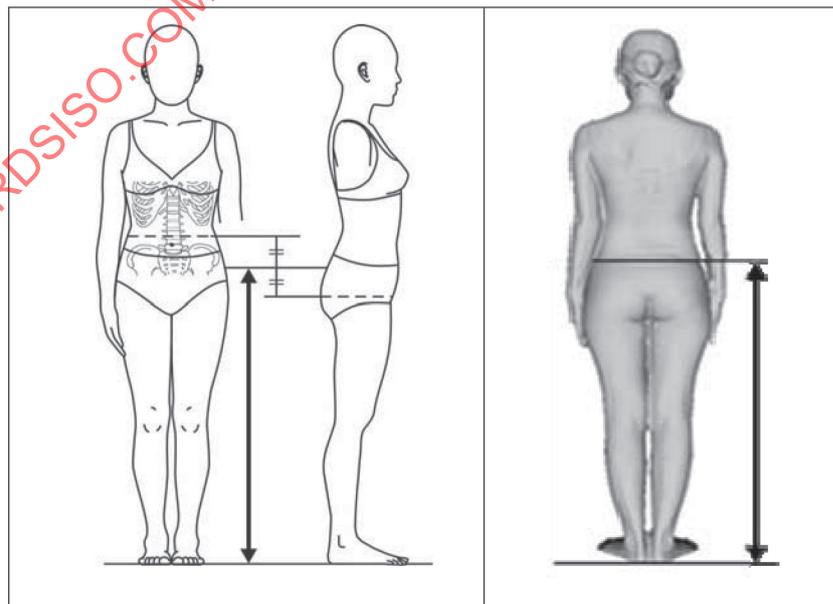


Figure 43 — Top hip height

5.1.13 Hip height

Definition: Vertical distance from the hip level to the ground (see [Figure 44](#)).

Position: Subject stands fully erect with feet together.

Equipment: Anthropometer.

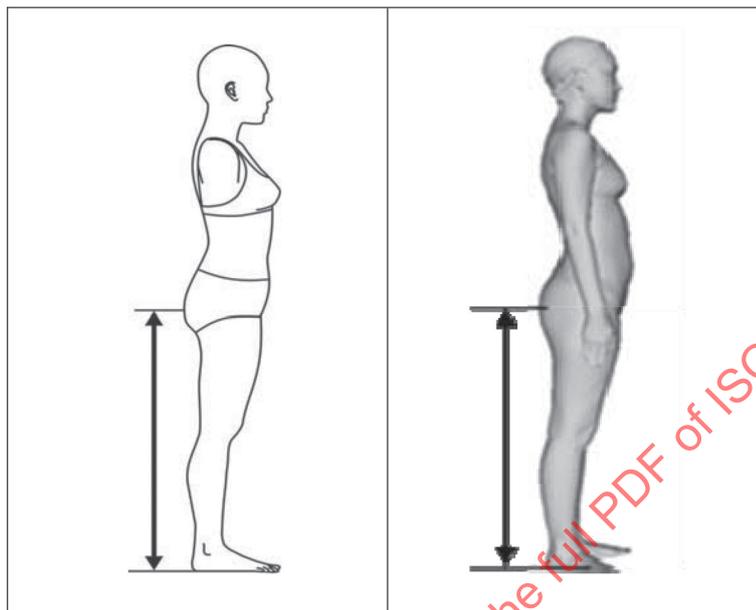


Figure 44 — Hip height

5.1.14 Maximum hip girth height

Definition: Vertical distance from the level of maximum hip girth to the ground (see [Figure 45](#)).

Position: Subject stands fully erect with feet together.

Equipment: Anthropometer.

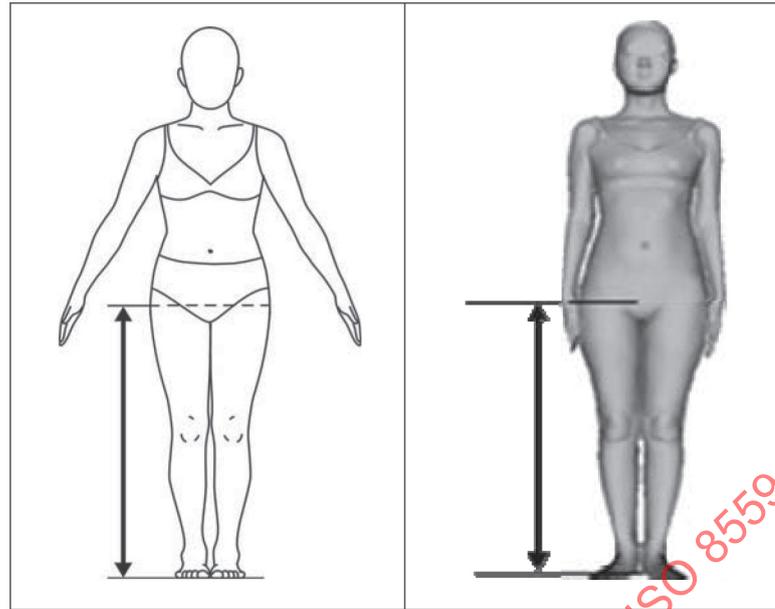


Figure 45 — Maximum hip girth height

5.1.15 Inside leg height

Definition: Vertical distance from the inside leg level to the ground (see [Figure 46](#)).

Position: Subject stands with legs shoulder width apart. The measurement is taken from the rear of the body.

Equipment: Anthropometer.

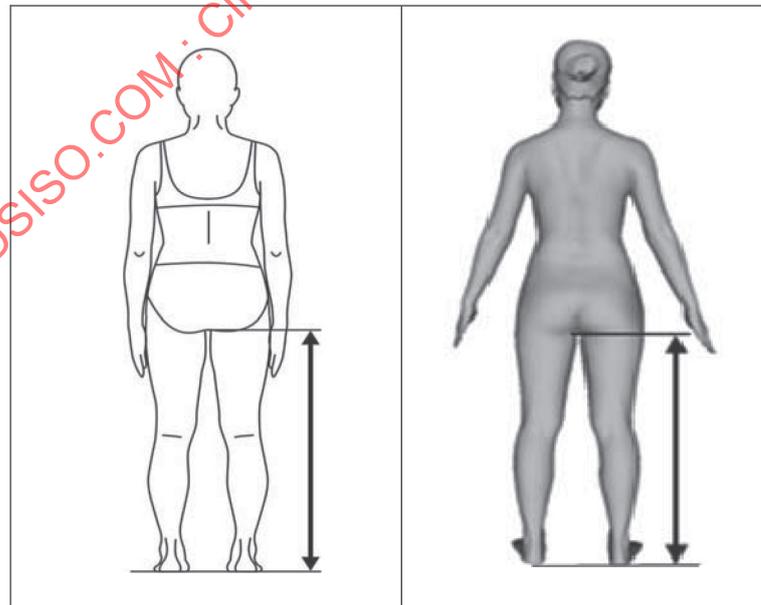


Figure 46 — Inside leg height

5.1.16 Knee height

Definition: Vertical distance from the centre point of kneecap to the ground (see [Figure 47](#)).

Position: Subject stands erect with feet together.

Equipment: Anthropometer.

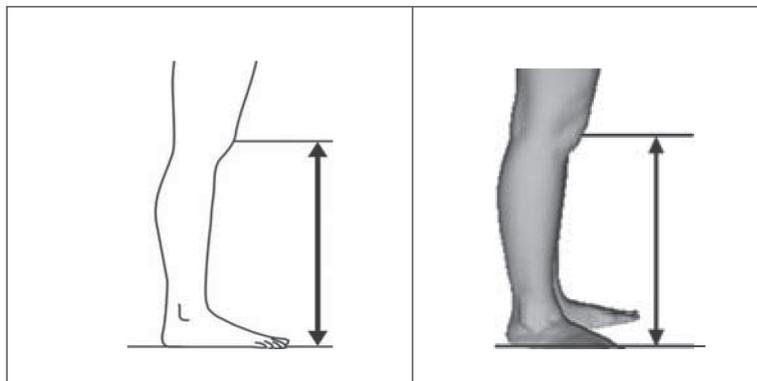


Figure 47 — Knee height

5.1.17 Outer ankle height

Definition: Vertical distance from the outer ankle point to the ground (see [Figure 48](#)).

Position: Subject stands erect with feet together.

Equipment: Anthropometer.

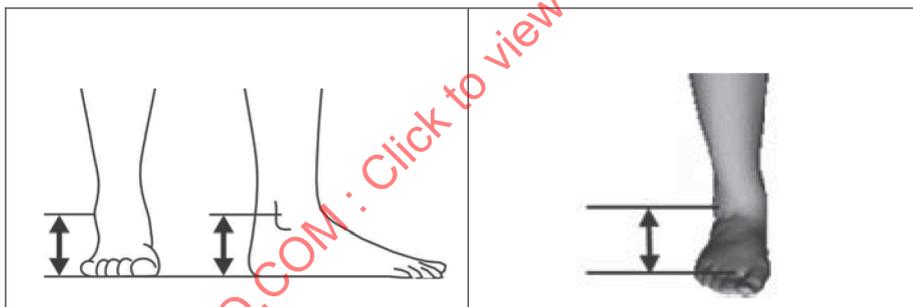


Figure 48 — Outer ankle height

5.1.18 Back neck height (sitting)

Definition: Vertical distance from back neck point to the top of the table (see [Figure 49](#)).

Position: Subject sits erect with the feet either supported or unsupported and the head in the Frankfurt plane. Thighs parallel to each other with a 90° angle between torso and thighs and thigh and lower leg. Legs are hanging freely.

Equipment: Anthropometer.

NOTE Similar to cervicale height (sitting) in ISO 7250-1, in which feet are supported.

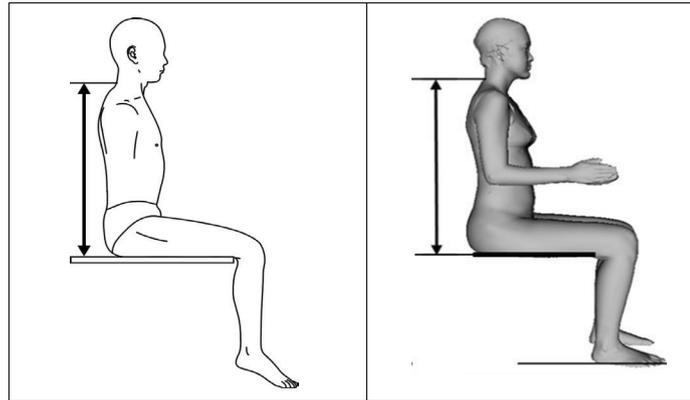


Figure 49 — Back neck height (sitting)

5.2 Breadths, widths and depths (Figures 50 to 56)

NOTE See [Table C.1](#) for mapping of breadths, widths and depths to points and levels ([3.1](#)) lines and planes ([3.2](#)).

5.2.1 Hip breadth

Definition: Maximum horizontal distance across the hips (see [Figure 50](#)).

Position: Subject stands erect with feet together. Measurement is taken without pressing into the flesh of the hips.

Equipment: Large sliding calliper.

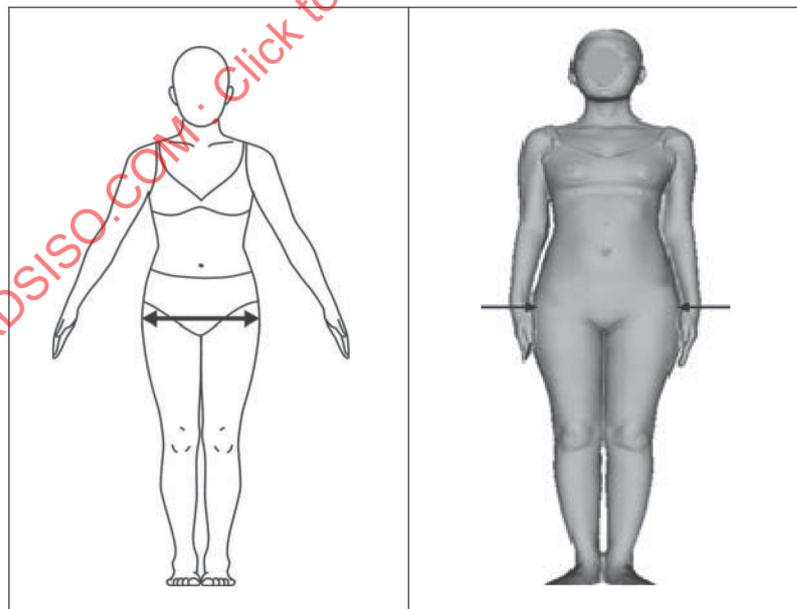


Figure 50 — Hip breadth

5.2.2 Neck base width

Definition: Distance between the side neck points (see [Figure 51](#)).

Position: Subject stands erect with feet together and arms hanging freely downwards and head in the

Frankfurt plane.

Equipment: Sliding calliper.

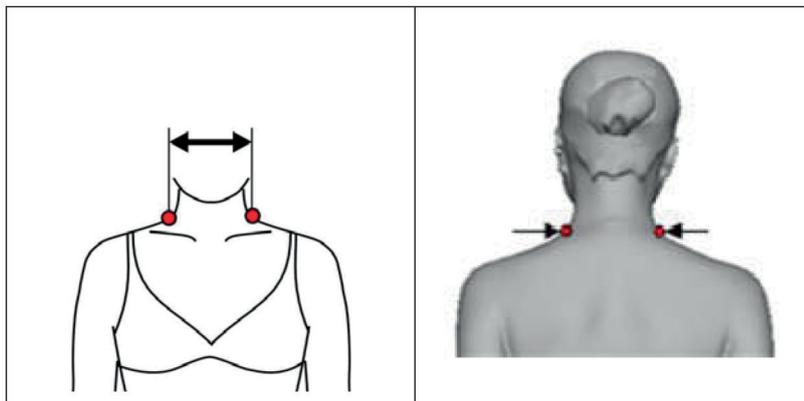


Figure 51 — Neck base width

5.2.3 Bust point width

Definition: Distance between the bust points (see [Figure 52](#)).

Position: Subject stands erect with feet together and arms hanging freely downwards.

Equipment: Tape measure.

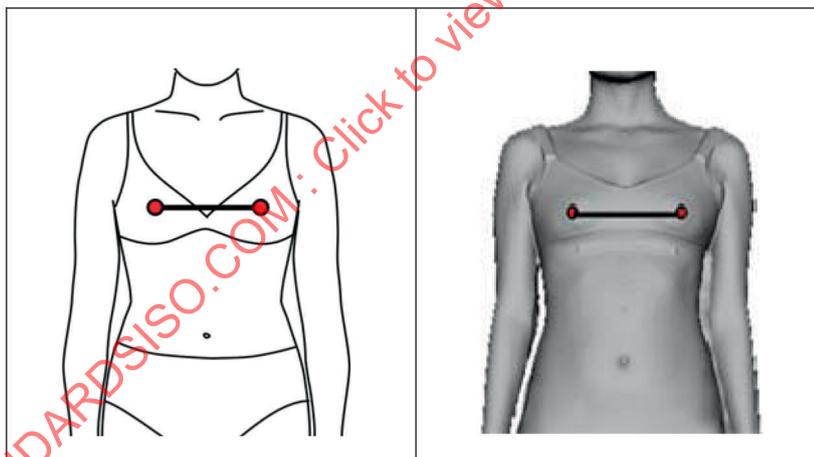


Figure 52 — Bust point width

5.2.4 Armscye front to back width

Definition: Horizontal distance between the back and front armscye fold points (see [Figure 53](#)).

Position: Subject stands erect with feet together and arms hanging freely downwards.

Equipment: Sliding calliper.

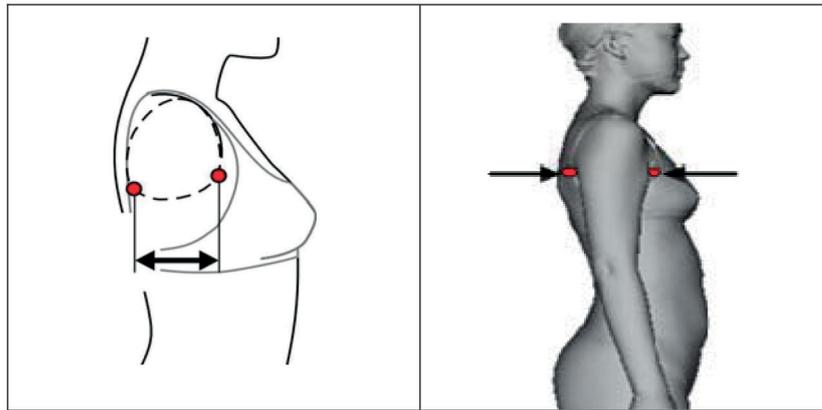


Figure 53 — Armscye front to back width

5.2.5 Chest depth

Definition: Horizontal depth of the torso measured in the midsagittal plane at the level of centre chest point (see [Figure 54](#)).

Position: Subject stands erect with arms hanging freely downwards.

Equipment: Large sliding calliper with curved arms or large spreading calliper.

NOTE Identical to chest depth, standing in ISO 7250-1.

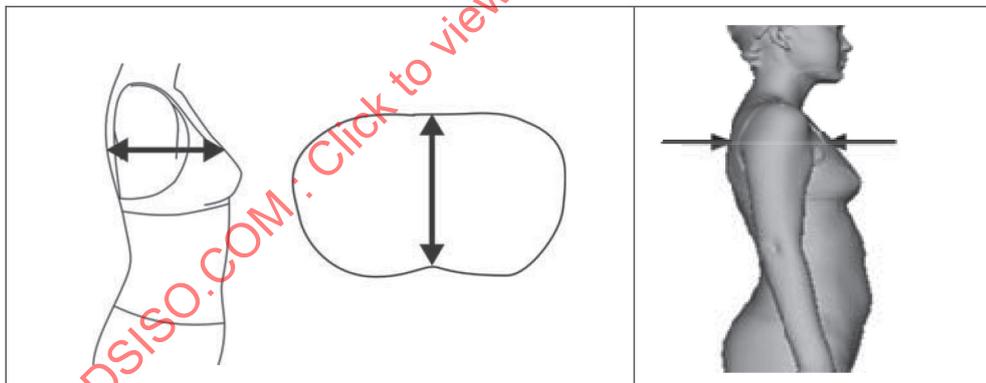


Figure 54 — Chest depth

5.2.6 Bust depth

Definition: Maximum horizontal depth of the thorax at the level of the bust point (see [Figure 55](#)).

Position: Subject stands erect with arms hanging freely downwards.

Equipment: Large sliding calliper.

NOTE Identical to thorax depth at the nipple in ISO 7250-1.

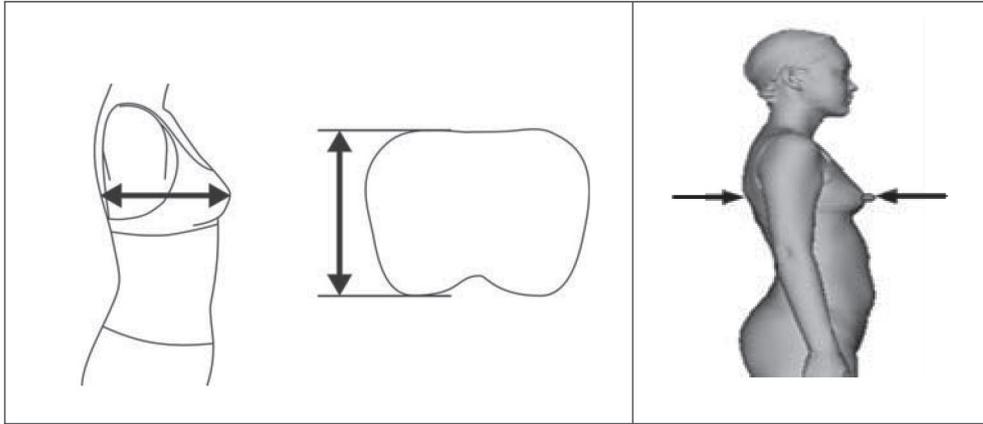


Figure 55 — Bust depth

5.2.7 Abdomen/hip depth

Definition: Maximum horizontal depth between the maximum anterior protrusion of the abdomen and the maximum prominence of the buttock (see [Figure 56](#)).

Position: Subject stands erect with the abdomen relaxed and rear most point of the buttock touching the surface of a vertical plane. Distance is measured from the vertical plane to the maximum protrusion of the abdomen.

Equipment: Large sliding calliper.

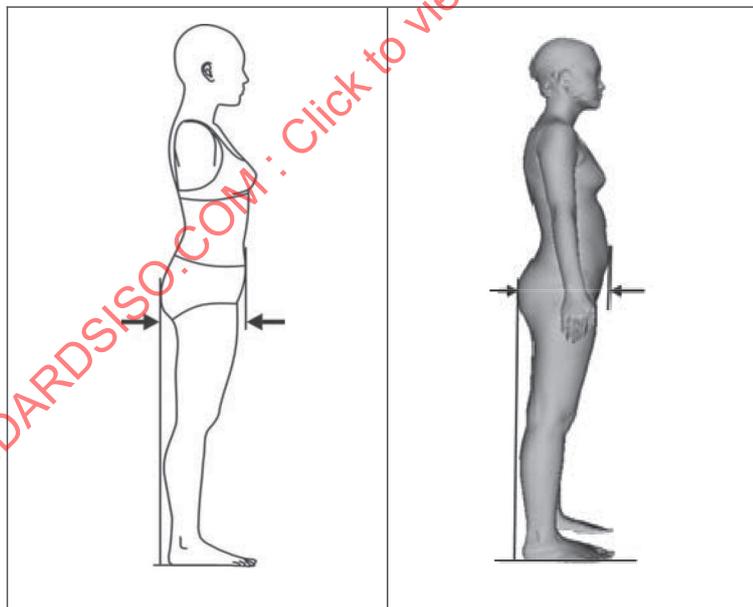


Figure 56 — Abdominal/hip depth

5.3 Girth measurements ([Figures 57 to 84](#))

NOTE See [Table C.2](#) for mapping of girth measurements to points and levels ([3.1](#)) lines and planes ([3.2](#)).

5.3.1 Head girth

Definition: Maximum, approximately horizontal, girth of head measured above centre point of brow ridge and crossing the rearmost point of the head. Hair shall be included in the measurement (see [Figure 57](#)).

Position: Subject sits or stands erect with head in the Frankfurt plane.

Equipment: Tape measure.

NOTE Identical to head circumference in ISO 7250-1.

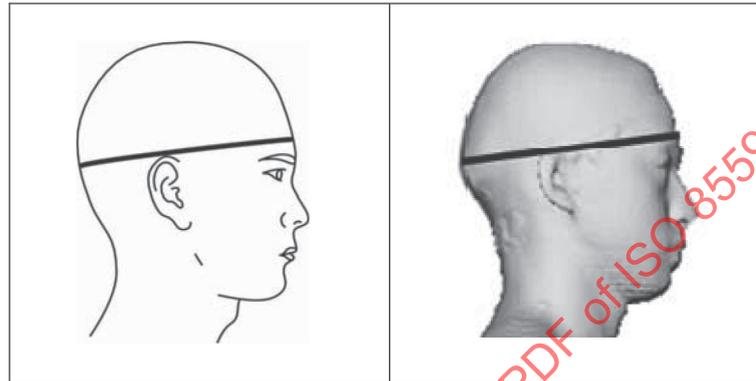


Figure 57 — Head girth

5.3.2 Neck girth

Definition: Girth of the neck at a point just below the bulge at the thyroid cartilage (Adam's apple) and measured perpendicular to the longitudinal axis of the neck (see [Figure 58](#)).

Position: Subject sits or stands erect with head in the Frankfurt plane.

Equipment: Tape measure.

NOTE Identical to neck circumference in ISO 7250-1.

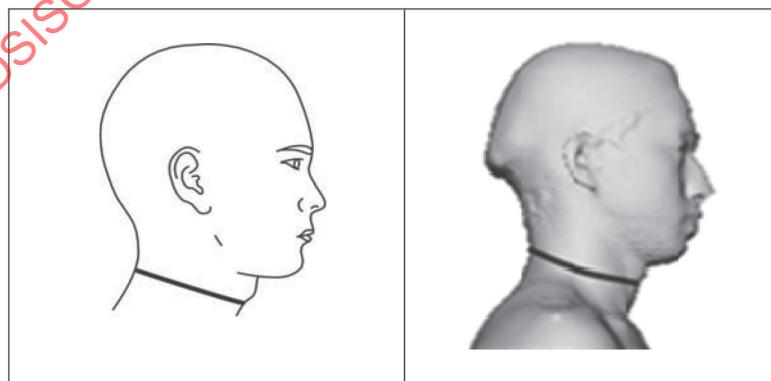


Figure 58 — Neck girth

5.3.3 Neck base girth

Definition: Girth of the base of the neck measured over back neck point and the front neck point (see [Figure 59](#)).

Position: Subject sits or stands erect with head in the Frankfurt plane.

Equipment: Tape measure, or Chainette and scale.

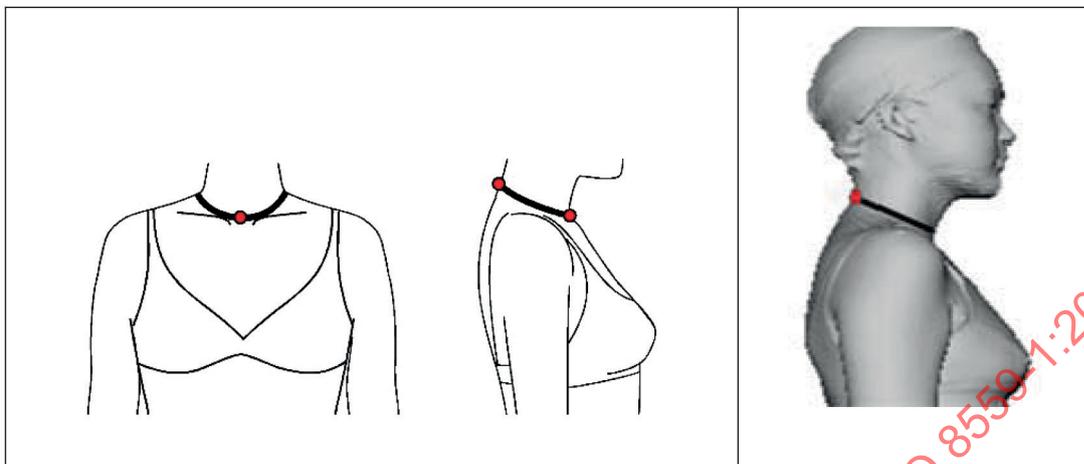


Figure 59 — Neck-base girth

5.3.4 Bust girth

Definition: Horizontal girth measured at bust point level (see [Figure 60](#)).

Position: Subject stands erect with arms hanging freely downward.

Equipment: Tape measure.

NOTE Identical to chest circumference in ISO 7250-1.

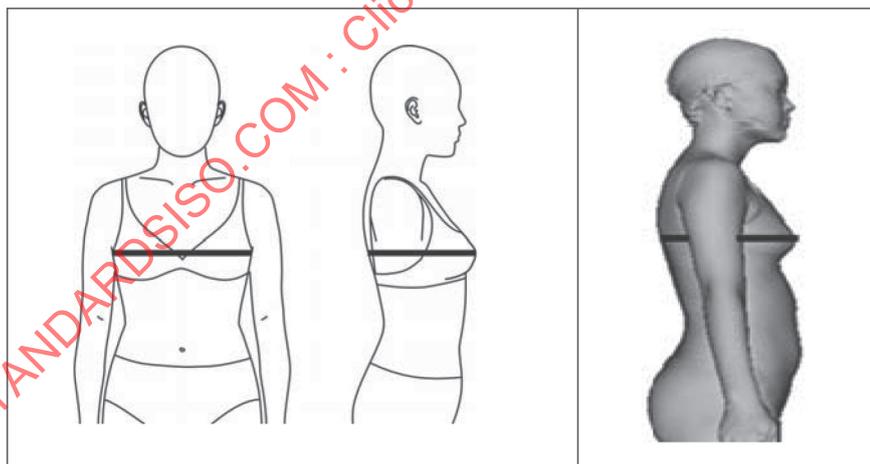


Figure 60 — Bust girth

5.3.5 Bust girth contoured

Definition: Horizontal girth measured against the body at a level of the bust points (see [Figure 61](#)).

Position: Subject stands erect with arms hanging freely downward.

Equipment: Tape measure.

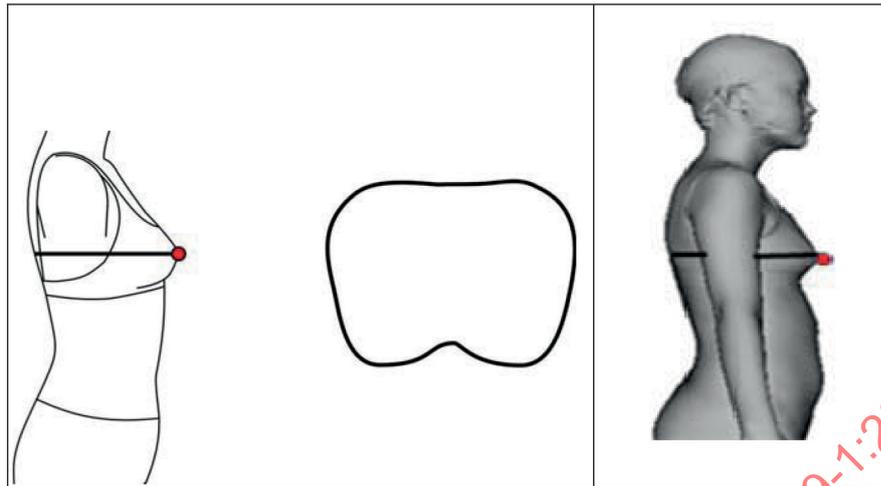


Figure 61 — Bust girth contoured

5.3.6 Chest girth (at axilla)

Definition: Horizontal girth of torso measured at axilla (see [Figure 62](#)).

Position: Subject stands erect with arms hanging freely downward.

Equipment: Tape measure.

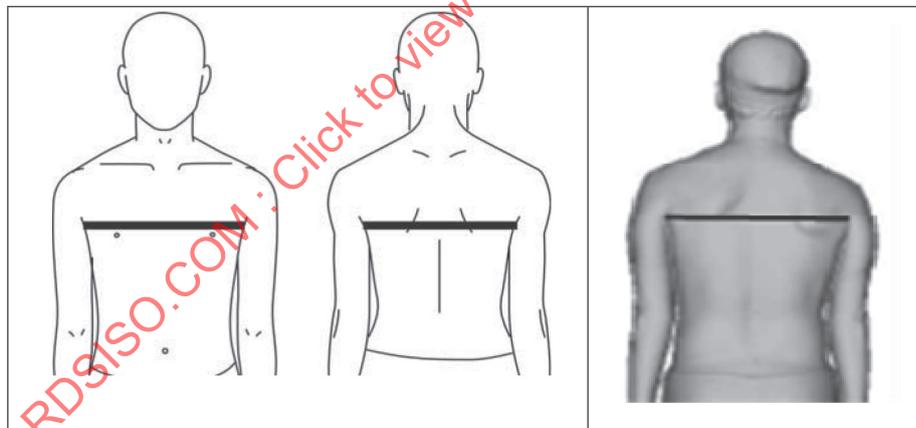


Figure 62 — Chest girth at axilla

5.3.7 Upper chest girth

Definition: Chest measured from the bust level at centre back, under the armpits and above the bust to the front (see [Figure 63](#)).

Position: Subject stands erect with arms hanging freely downward.

Equipment: Tape measure.

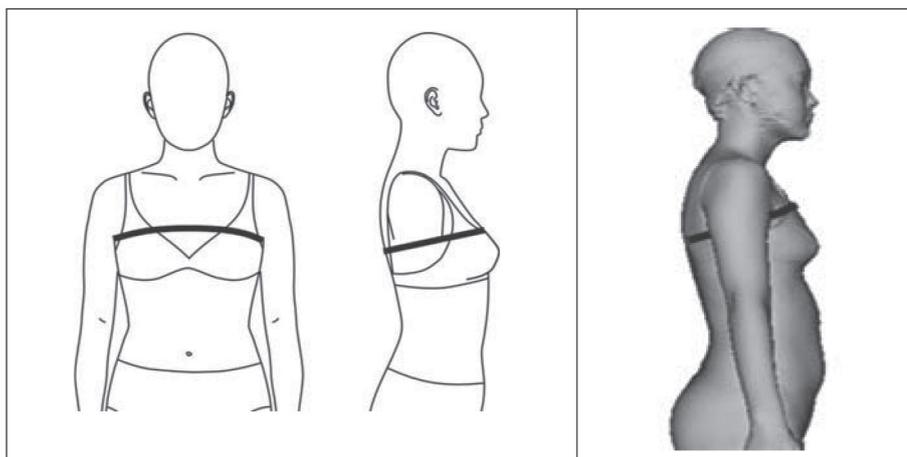


Figure 63 — Upper chest girth

5.3.8 Under bust girth

Definition: Horizontal girth of the body at the under bust level (see [Figure 64](#)).

Position: Subject stands erect with arms hanging freely downwards.

Equipment: Tape measure.

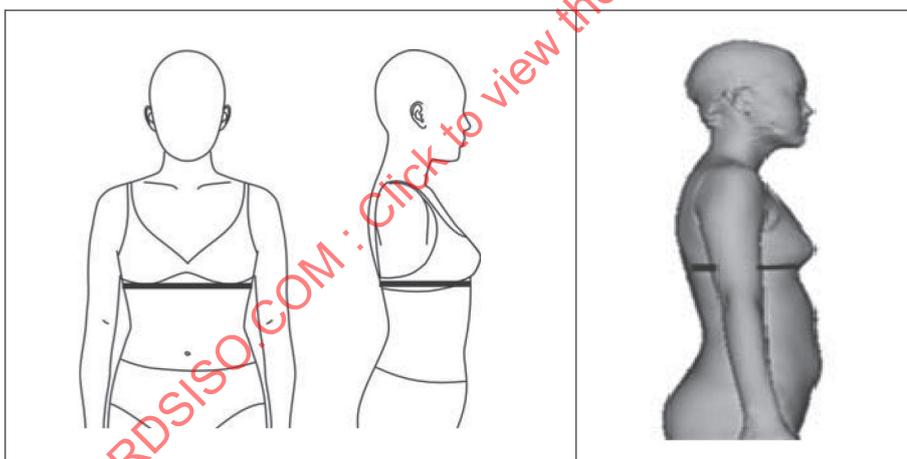


Figure 64 — Under bust girth

5.3.9 Midriff girth

Definition: Horizontal girth of the body measured at the midriff level (see [Figure 65](#)).

Position: Subject stands erect with the abdomen relaxed.

Equipment: Tape measure.

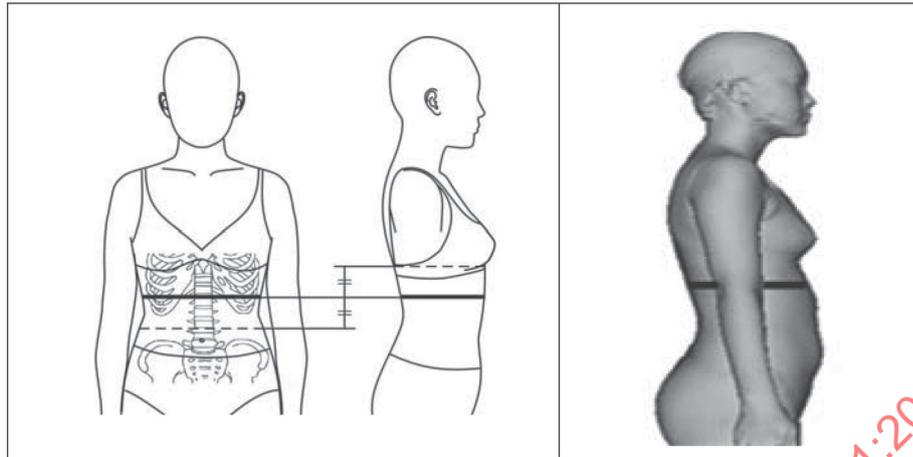


Figure 65 — Midriff girth

5.3.10 Waist girth

Definition: Horizontal girth of the body measured at the waist level (see [Figure 66](#)).

Position: Subject stands erect with the abdomen relaxed.

Equipment: Tape measure.

NOTE Identical to waist circumference in ISO 7250-1.

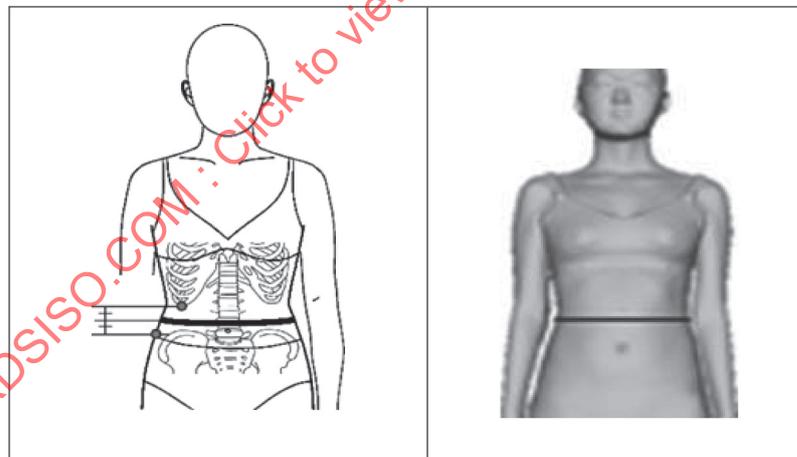


Figure 66 — Waist girth

5.3.11 Upper hip girth

Definition: Horizontal girth of the body measured at the upper hip level (see [Figure 67](#)).

Position: Subject stands erect with feet together with the abdomen relaxed.

Equipment: Tape measure.

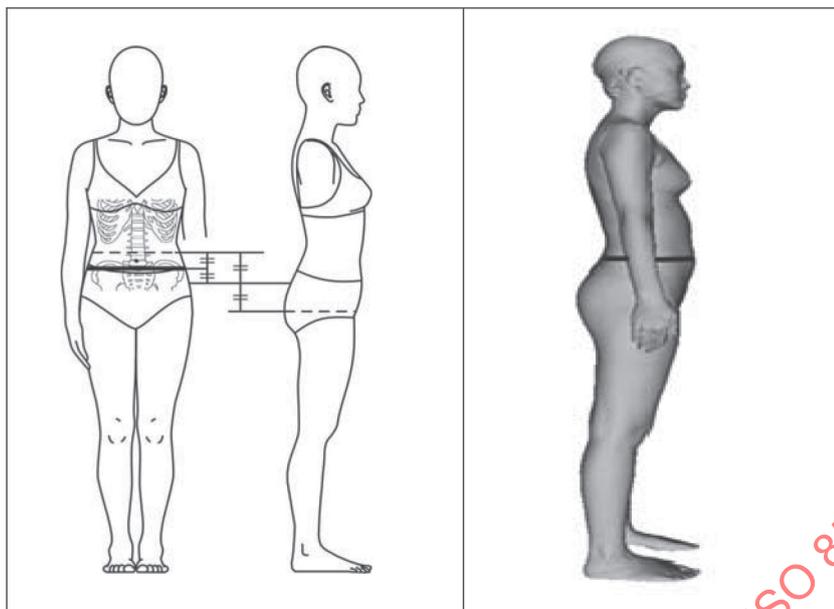


Figure 67 — Upper hip girth

5.3.12 Top hip girth

Definition: Horizontal girth of the body measured at the top hip level (see [Figure 68](#)).

Position: Subject stands erect with feet together with the abdomen relaxed.

Equipment: Tape measure.

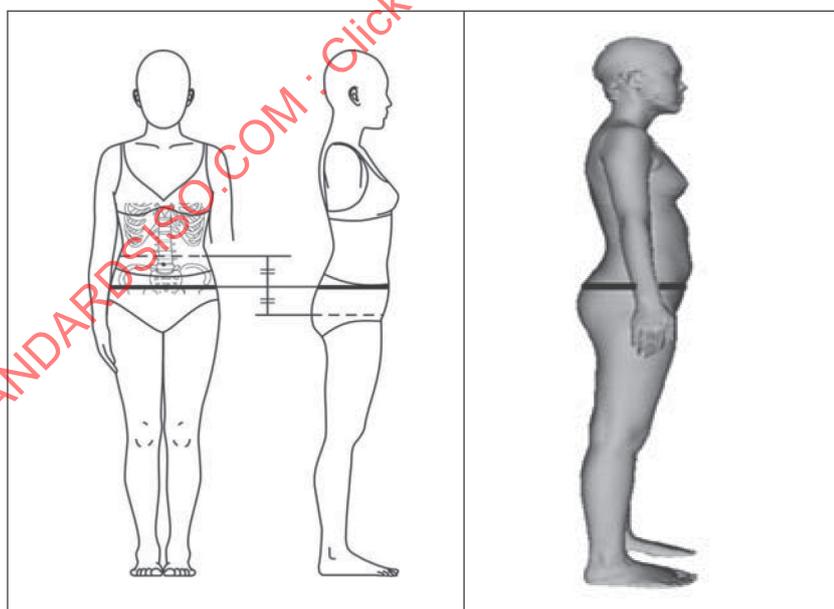


Figure 68 — Top hip girth

5.3.13 Hip girth

Definition: Horizontal girth of the body measured at the hip level (see [Figure 69](#)).

Position: Subject stands erect with feet together with the abdomen relaxed.

Equipment: Tape measure.

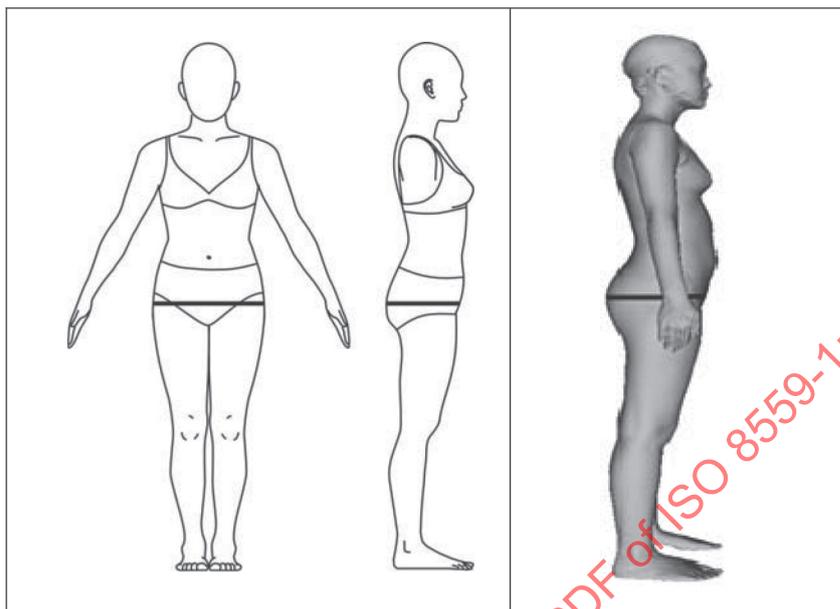


Figure 69 — Hip girth

5.3.14 Maximum hip girth (seat measure girth)

Definition: Maximum horizontal girth of the body below the hip level (see [Figure 70](#)).

Position: Subject stands erect with feet together with the abdomen relaxed.

Equipment: Tape measure.

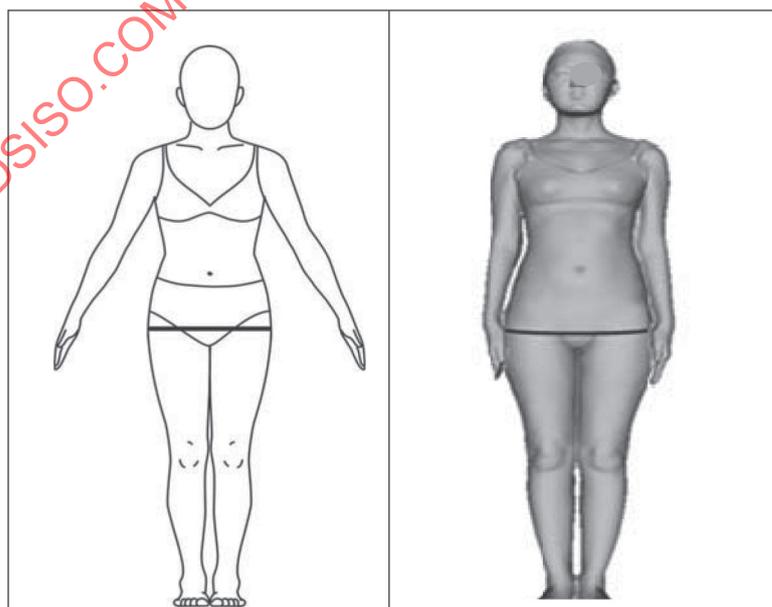


Figure 70 — Maximum hip girth

5.3.15 Armscye girth

Definition: Girth of the armscye measured from, and to, the shoulder point passing under the arm (see [Figure 71](#)).

Position: Subject stands erect with the arms hanging freely downward.

Equipment: Tape measure.

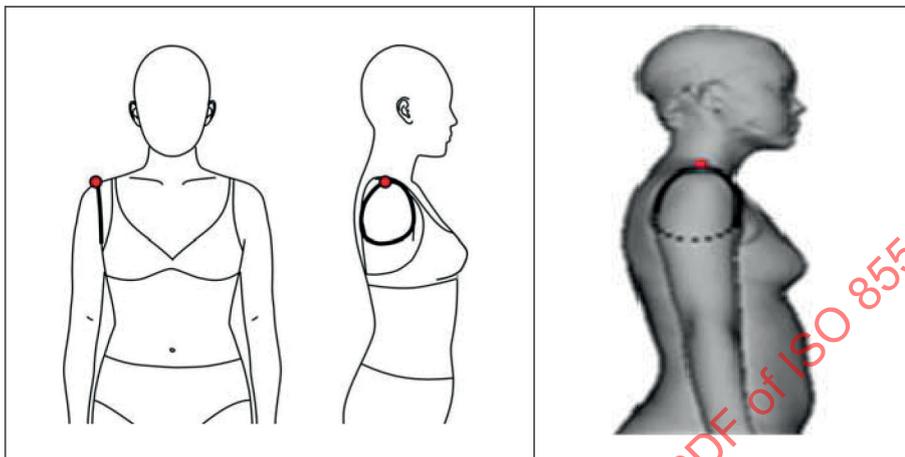


Figure 71 — Armscye girth

5.3.16 Upper-arm girth

Definition: Girth of the upper arm measured midway between the shoulder point and elbow point (see [Figure 72](#)).

Position: Subject stands erect with arms abducted to form a 20° angle with the side of the body.

Equipment: Tape measure.

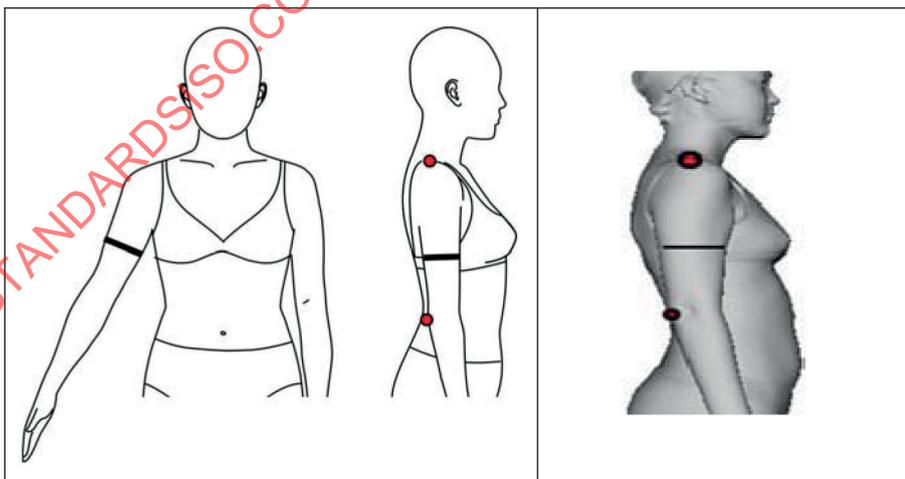


Figure 72 — Upper-arm girth

5.3.17 Elbow girth

Definition: Girth of the arm at the elbow point (see [Figure 73](#)).

Position: Subject stands erect with the arms hanging freely downward.

Equipment: Tape measure.

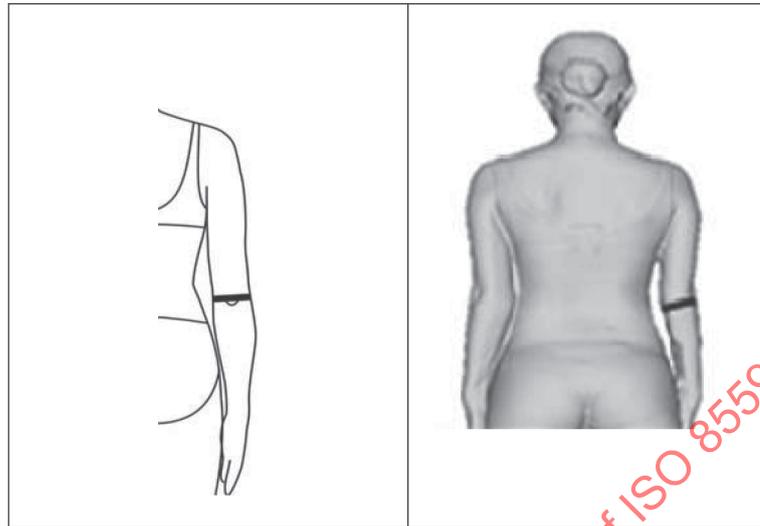


Figure 73 — Elbow girth

5.3.18 Elbow girth, arm bent

Definition: Girth of the elbow at the elbow point (see [Figure 74](#)).

Position: Subject stands erect with the elbow bent at a 90° angle and the hand and fingers extended.

Equipment: Tape measure.

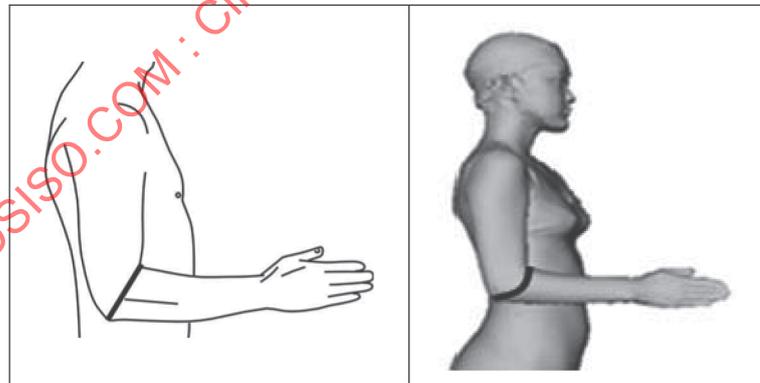


Figure 74 — Elbow girth arm bent

5.3.19 Wrist girth

Definition: Girth of the wrist at the level of wrist point (see [Figure 75](#)).

Position: Subject holds forearm horizontal, hand outstretched, fingers extended, palm facing down.

Equipment: Tape measure.

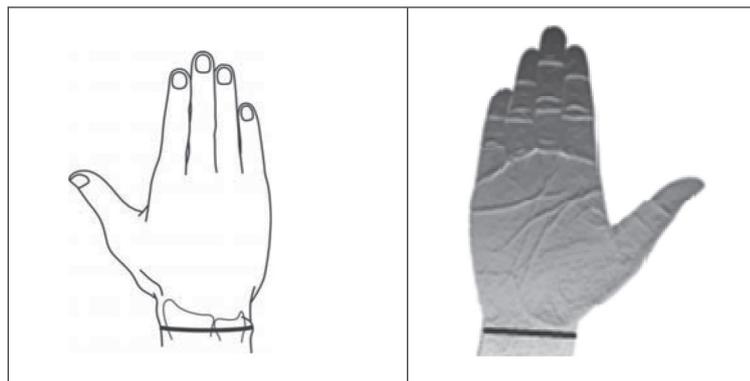


Figure 75 — Wrist girth

5.3.20 Thigh girth

Definition: Maximum horizontal girth of the thigh below the gluteal fold (see [Figure 76](#)).

Position: Subject stands erect with legs shoulder width apart.

Equipment: Tape measure.

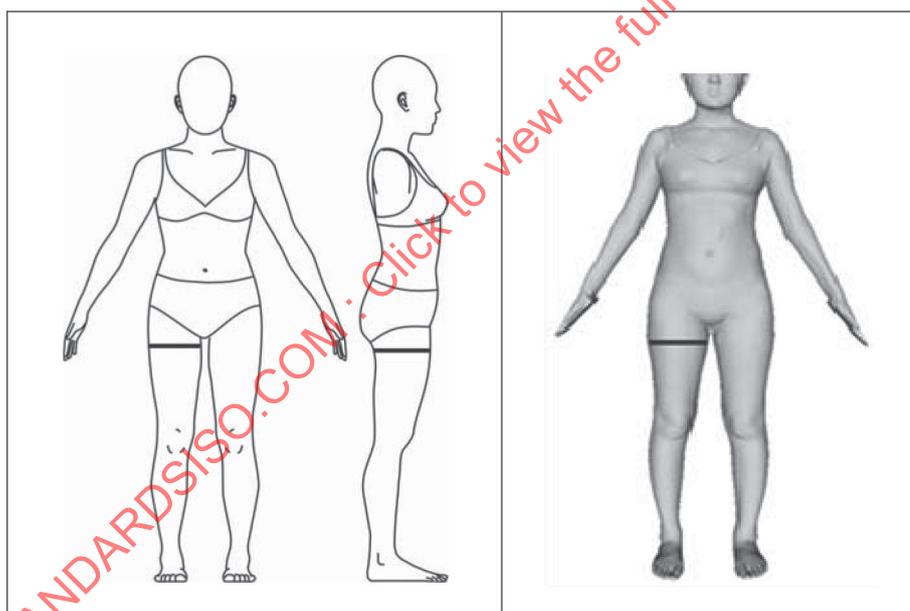


Figure 76 — Thigh girth

5.3.21 Mid - thigh girth

Definition: Horizontal girth of the thigh measured midway between the inside leg level and the centre point of knee cap (see [Figure 77](#)).

Position: Subject stands erect with legs shoulder width apart.

Equipment: Tape measure.

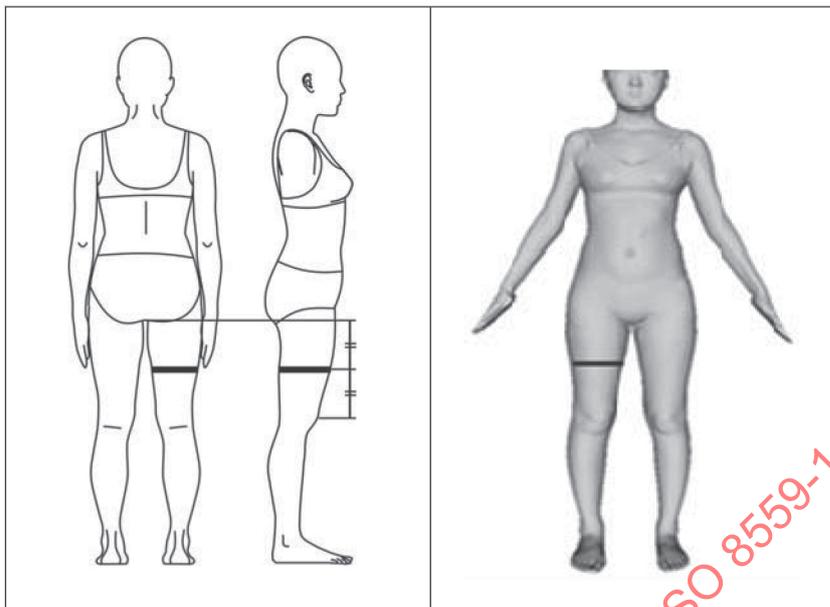


Figure 77 — Mid thigh girth

5.3.22 Knee girth

Definition: Horizontal girth of the knee at the level of the centre point of knee-cap (see [Figure 78](#)).

Position: Subject stands erect with legs shoulder width apart.

Equipment: Tape measure.

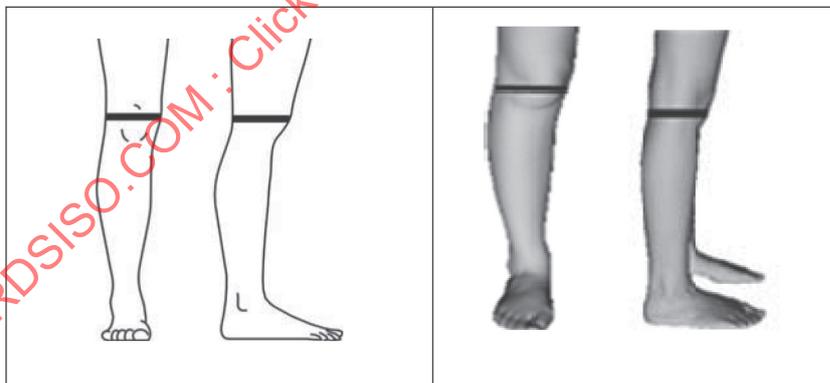


Figure 78 — Knee girth

5.3.23 Lower knee girth

Definition: Horizontal girth of the lower leg just below the patella (see [Figure 79](#)).

Position: Subject stands erect with legs shoulder width apart.

Equipment: Tape measure.

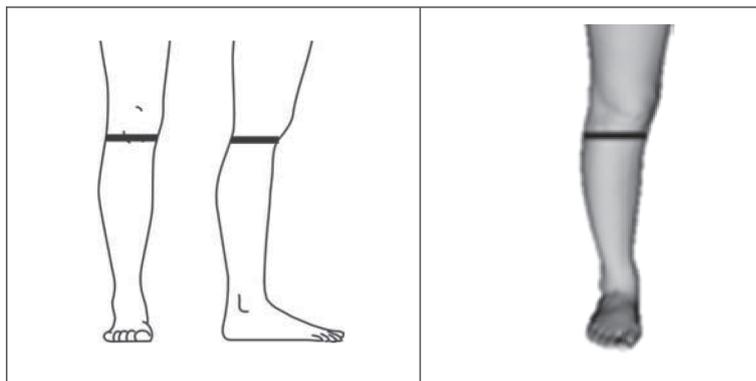


Figure 79 — Lower knee girth

5.3.24 Calf girth

Definition: Maximum horizontal girth of the calf (see [Figure 80](#)).

Position: Subject stands erect with legs shoulder width apart.

Equipment: Tape measure.

NOTE Identical to calf circumference in ISO 7250-1.

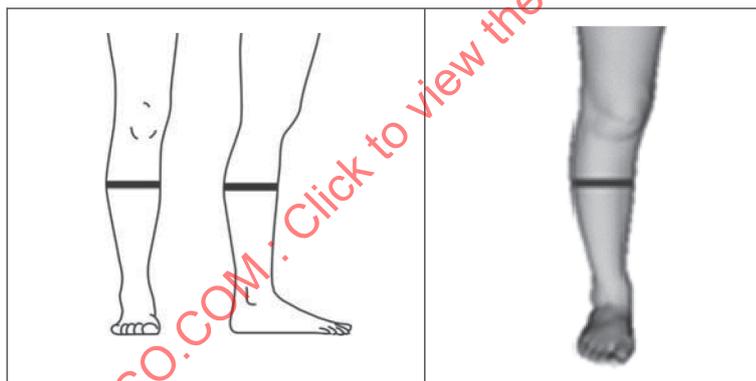


Figure 80 — Calf girth

5.3.25 Minimum leg girth

Definition: Minimum horizontal girth of the lower leg just above the ankle bone (see [Figure 81](#)).

Position: Subject stands erect with legs shoulder width apart.

Equipment: Tape measure.



Figure 81 — Minimum leg girth

5.3.26 Ankle girth

Definition: Horizontal girth of the leg measured at the level of the outer ankle point (see [Figure 82](#)).

Position: Subject stands erect with legs shoulder width apart.

Equipment: Tape measure.



Figure 82 — Ankle girth

5.3.27 Diagonal trunk girth

Definition: Distance from the shoulder line, midway between the side neck point and the shoulder point, down the back between the legs, over the bust point to the starting point, avoiding constriction at the crotch and the bust. The tape measure touches the body at the waistline at the front and back of the body (see [Figure 83](#)).

Position: Subject stands erect with legs shoulder width apart, and arms hanging freely downward.

Equipment: Tape measure.

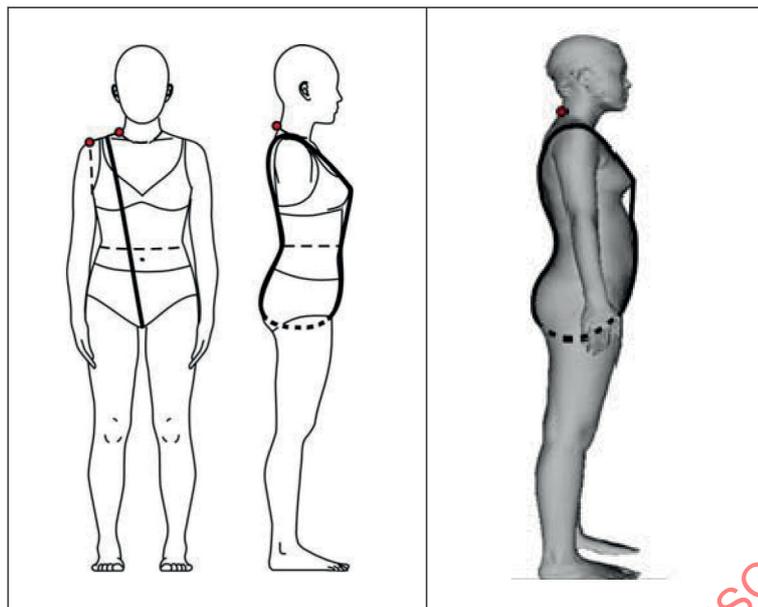


Figure 83 — Diagonal trunk girth

5.3.28 Centre trunk length

Definition: Distance from back neck point through crotch to the centre of the front neck point (see [Figure 84](#)).

Position: Subject stands erect with legs shoulder width apart and arms hanging freely downward.

Equipment: Tape measure.

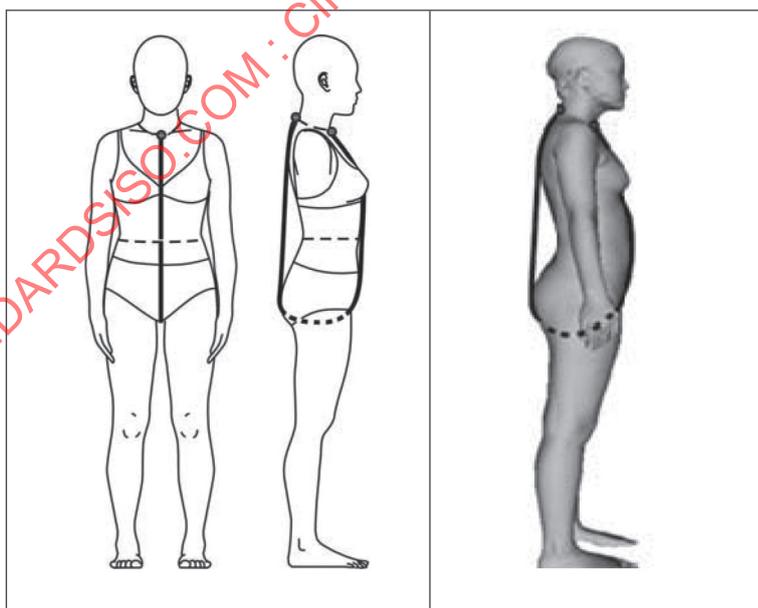


Figure 84 — Centre trunk length

5.4 Distances measured following the surface of the body (Figures 85 to 107)

NOTE See C3 for mapping measurement distances to points and levels (3.1) lines and planes (3.2).

5.4.1 Shoulder length

Definition: Distance from the side neck point to the shoulder point (see Figure 85).

Position: Subject sits or stands erect with shoulders relaxed.

Equipment: Tape measure.

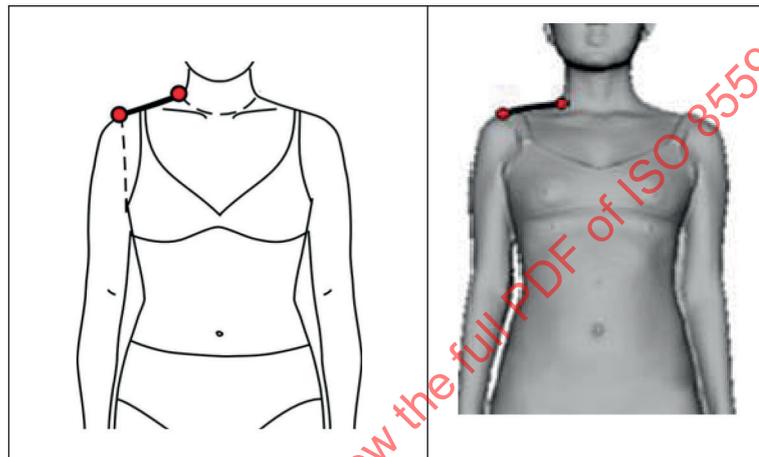


Figure 85 — Shoulder length

5.4.2 Back shoulder width

Definition: Distance between the right and left shoulder points (see Figure 86).

Position: Subject sits or stands erect with shoulders relaxed.

Equipment: Tape measure.

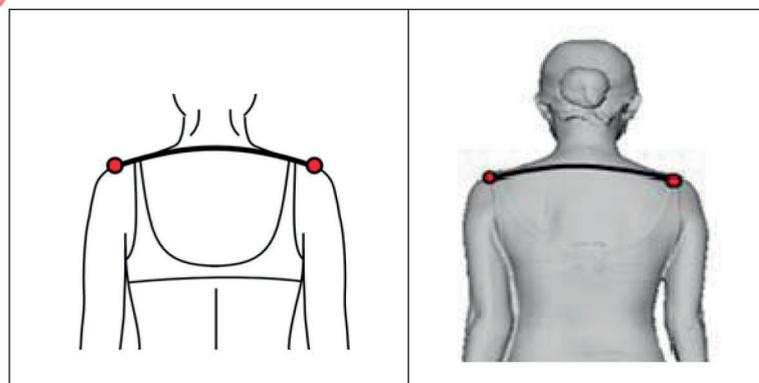


Figure 86 — Back shoulder width

5.4.3 Across back shoulder width (through the back neck point)

Definition: Distance from the left shoulder point, through the back neck point to the right shoulder point (see [Figure 87](#)).

Position: Subject sits or stands erect with shoulders relaxed.

Equipment: Tape measure.

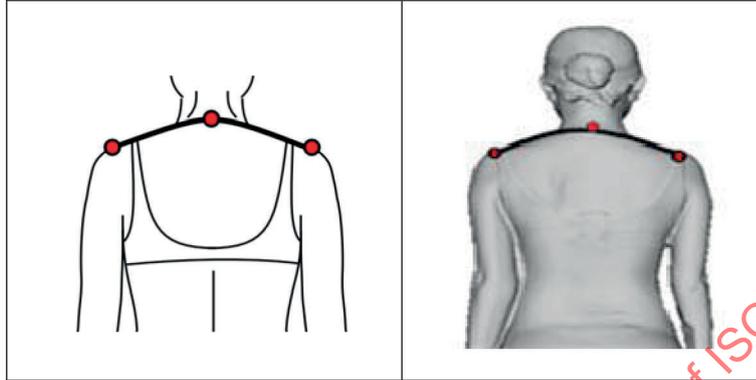


Figure 87 — Across back shoulder width (through the back neck point)

5.4.4 Across back width

Definition: Distance across the back between the left and right arm scye lines (see [Figure 88](#)). The level of measurement is midway between the shoulder point and the armpit back fold point.

Position: Subject sits or stands erect with shoulders relaxed.

Equipment: Tape measure.

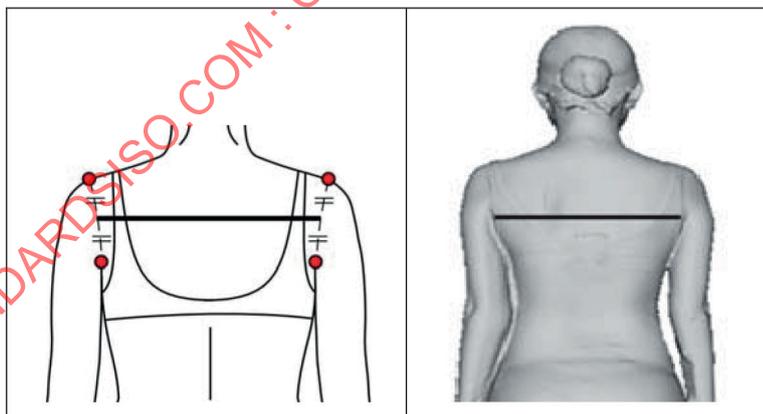


Figure 88 — Across back width

5.4.5 Back neck point to waist

Definition: Distance from back neck point to waist level (see [Figure 89](#)).

Position: Subject stands erect with arms hanging freely downward and shoulders relaxed. Head in the Frankfurt plane.

Equipment: Tape measure.

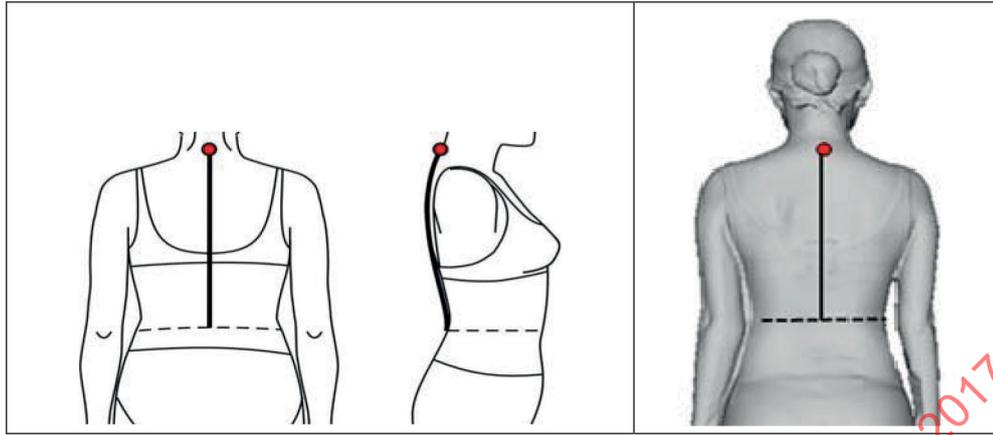


Figure 89 — Back neck point to waist

5.4.6 Scye depth length

Definition: Distance, measured vertically on the body from back neck point to the upper edge of a tape-measure passing horizontally under the arms at axilla (see [Figure 90](#)).

Position: Subject stands erect with arms hanging freely downward and head in the Frankfurt plane.

Equipment: Tape measure.

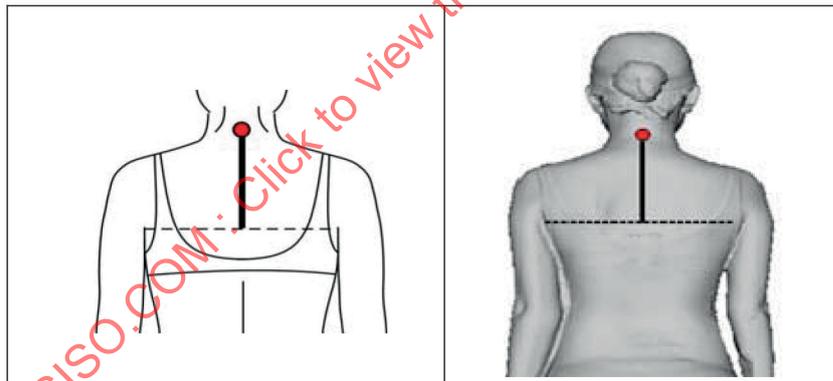


Figure 90 — Scye depth length

5.4.7 Across front width

Definition: Distance across the front between the left and right armscye lines (see [Figure 91](#)). The level of measurement is midway between the shoulder point and the armpit front fold point.

Position: Subject sits or stands erect with shoulders relaxed.

Equipment: Tape measure.

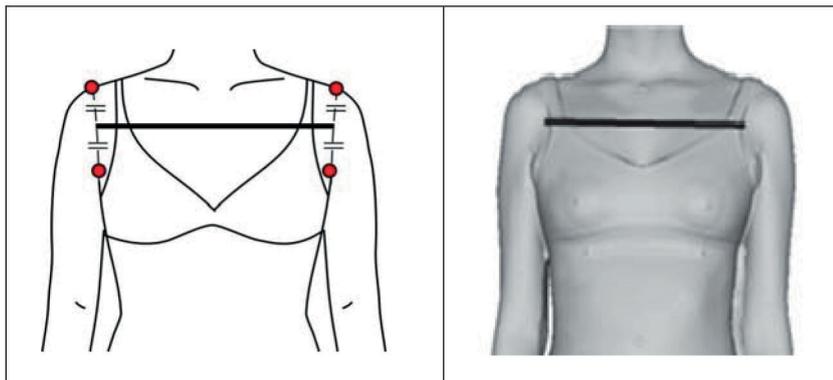


Figure 91 — Across front width

5.4.8 Front neck point to waist

Definition: Distance, measured vertically from front neck point to waist level (see [Figure 92](#)).

Position: Subject stands erect with arms hanging freely downward.

Equipment: Tape measure.

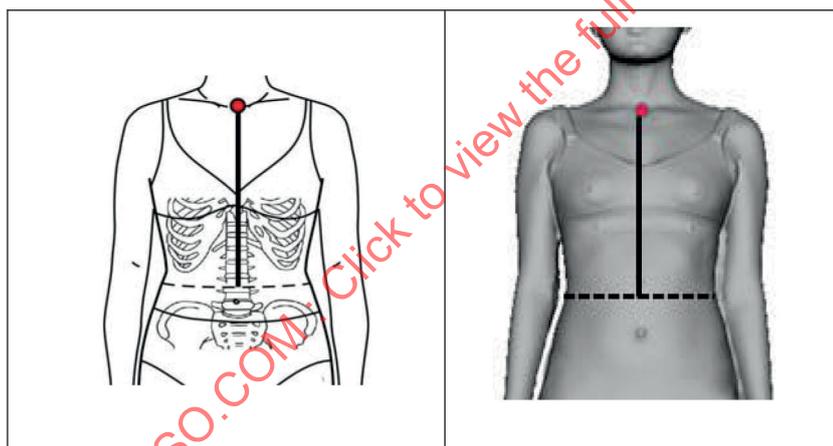


Figure 92 — Front neck point to waist

5.4.9 Side waist length

Definition: Distance from midpoint of armpit front fold point and armpit back fold point to waist level (see [Figure 93](#)).

Position: Subject stands erect with shoulders relaxed and arms abducted to form a 20° angle with the side of the body.

Equipment: Tape measure.

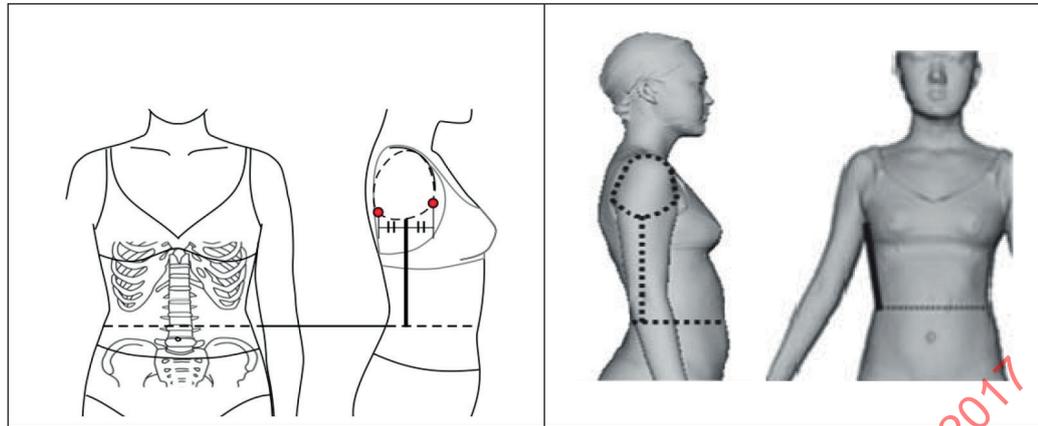


Figure 93 — Side waist length

5.4.10 Side neck point to bust point

Definition: Distance from the side neck point to the bust point (see [Figure 94](#)).

Position: Subject stands erect with arms hanging freely downward, head in the Frankfurt plane.

Equipment: Tape measure.

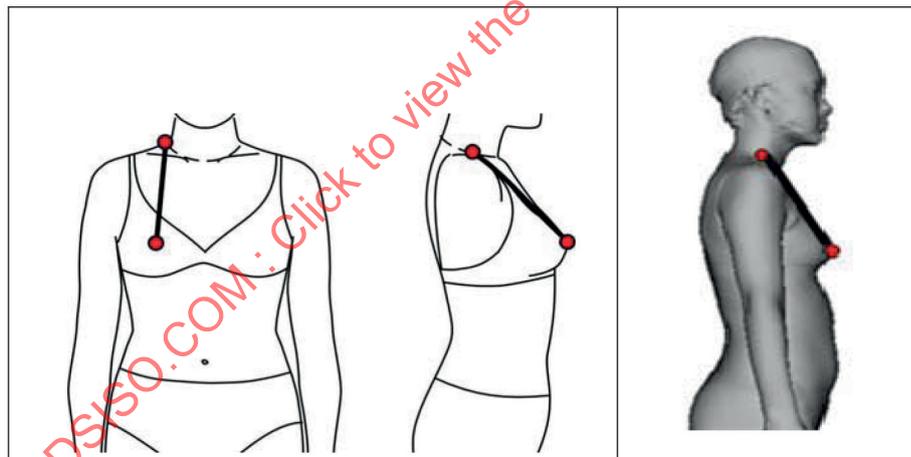


Figure 94 — Side neck point to bust point

5.4.11 Side neck point to waist level

Definition: Distance from side neck point, over the bust point, then vertically straight to the waist level (see [Figure 95](#)).

Position: Subject stands erect, arms hanging freely downward, shoulders relaxed, head in the Frankfurt plane.

Equipment: Tape measure.

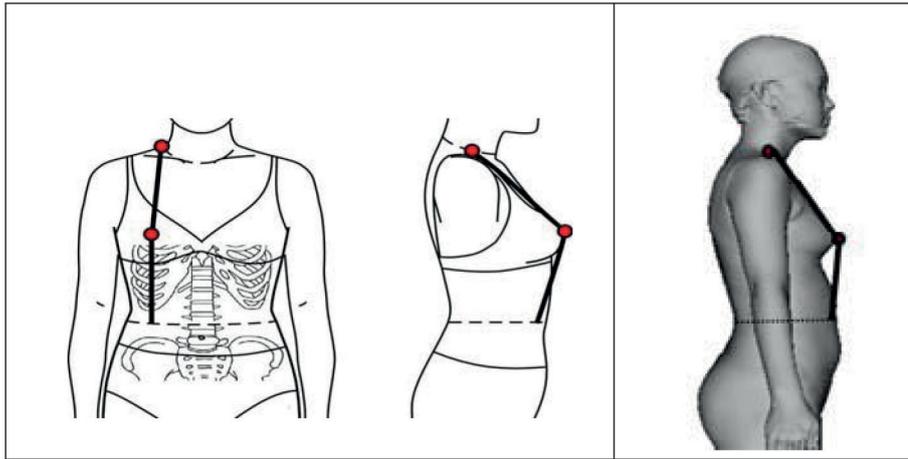


Figure 95 — Side neck point to waist

5.4.12 Back neck point to bust point

Definition: Distance from back neck point along neck base line to side neck point, then to bust point (see [Figure 96](#)).

Position: Subject stands erect with arms hanging freely downward, head in the Frankfurt plane.

Equipment: Tape measure.

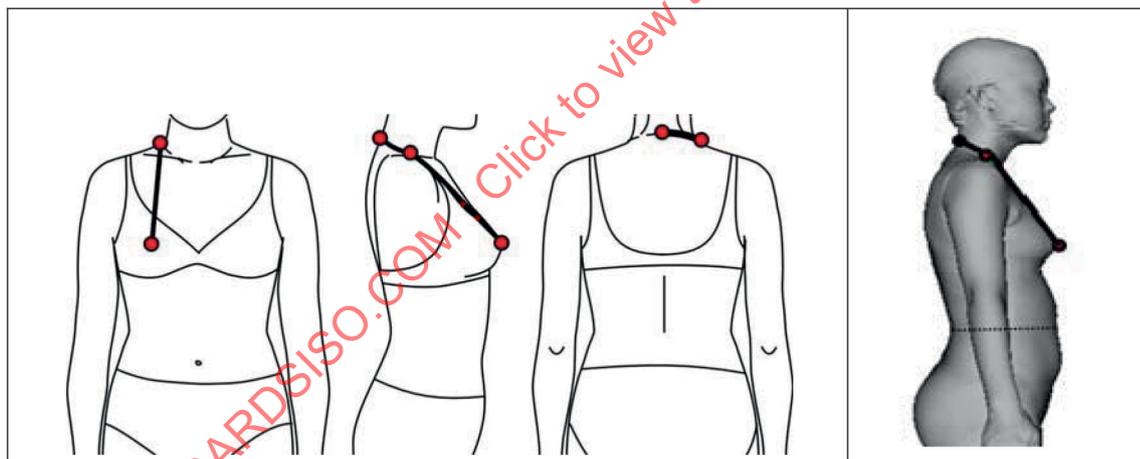


Figure 96 — Back neck point to bust point length

5.4.13 Back neck point to waist level

Definition: Distance from back neck point along the neck base line to the side neck point, over the bust point, then straight to the waist level (see [Figure 97](#)).

Position: Subject stands erect with arms hanging freely downward, head in the Frankfurt plane.

Equipment: Tape measure.

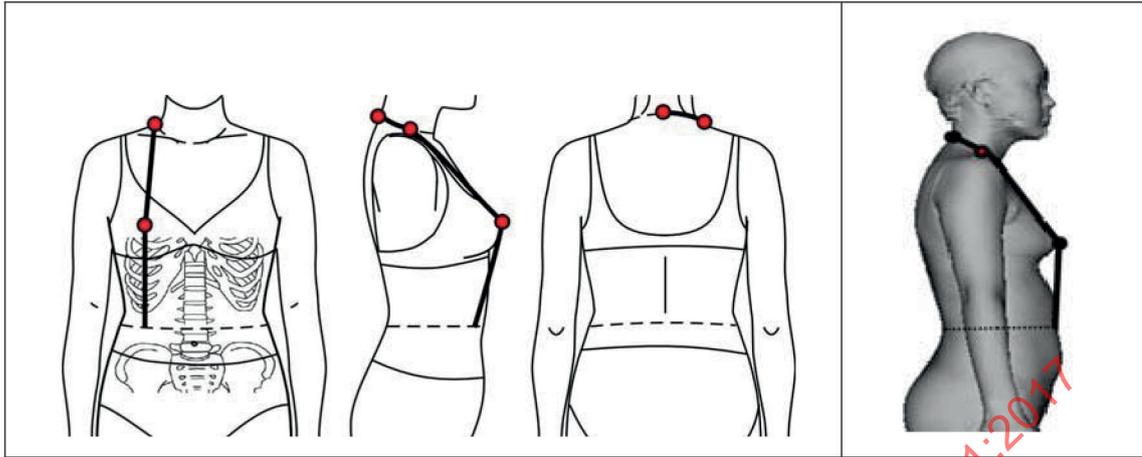


Figure 97 — Back neck point to waist level

5.4.14 Upper arm length (shoulder to elbow, elbow bent)

Definition: Distance from the shoulder point to the elbow point (see [Figure 98](#)).

Position: Subject stands erect with shoulders relaxed and fist placed on the hip bone.

Equipment: Tape measure.

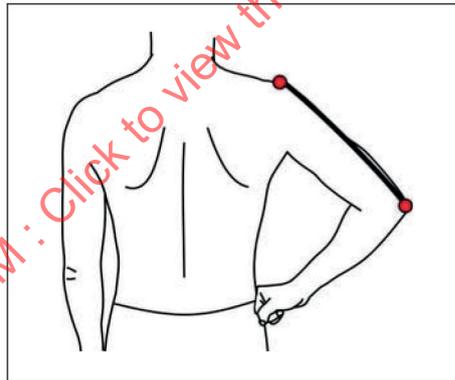


Figure 98 — Upper arm length

5.4.15 Lower arm length (elbow to wrist - elbow bent)

Definition: Distance from the elbow point to the wrist point (see [Figure 99](#)).

Position: Subject stands erect with shoulders relaxed and fist placed on the hip bone.

Equipment: Tape measure.

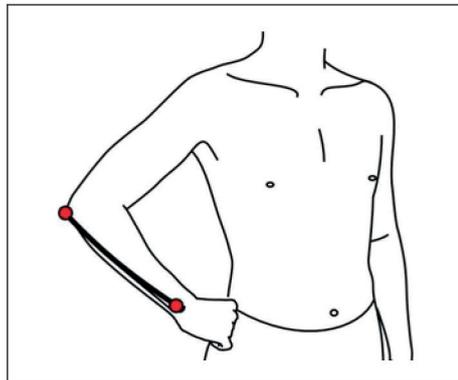


Figure 99 — Lower arm length — elbow bent

5.4.16 Underarm length

Definition: Distance between the armpit front fold point and palm side of the wrist at a level of the wrist point (see [Figure 100](#)).

Position: Subject stands erect with the arm abducted to form a 20° angle with the side of the body with the palm facing the body.

Equipment: Tape measure.

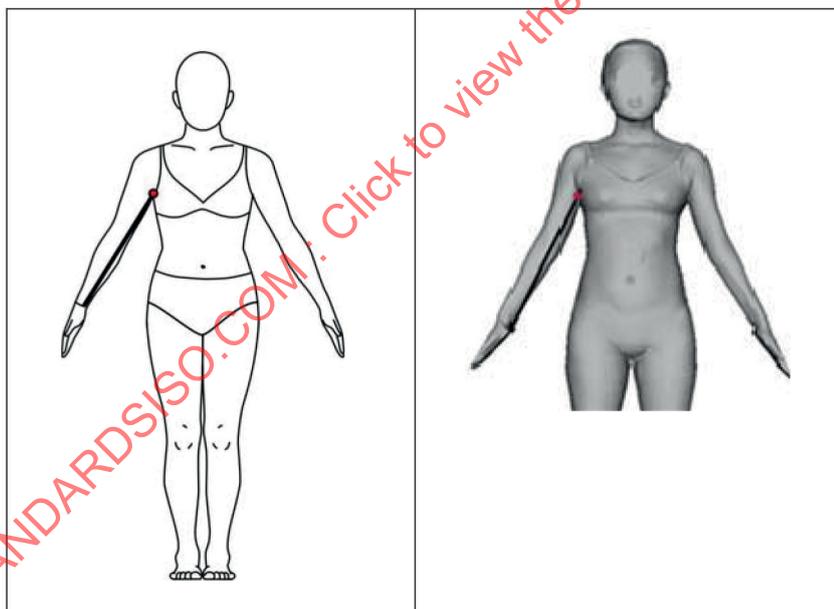


Figure 100 — Under arm length

5.4.17 Back neck point to wrist length

Definition: Distance across the shoulder and down the arm from the back neck point over the shoulder point and the elbow point to the wrist point (see [Figure 101](#)).

Position: Subject stands erect with the arms hanging freely downward.

Equipment: Tape measure.

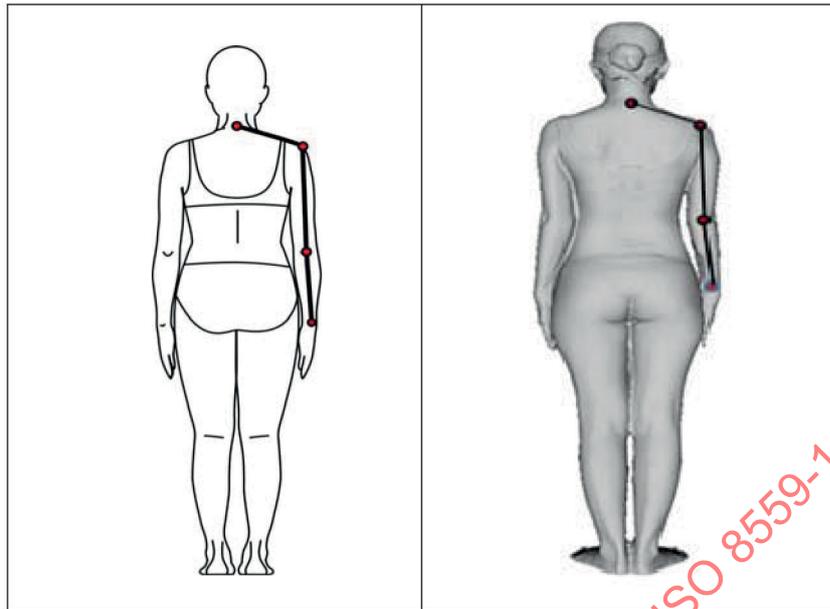


Figure 101 — Back neck point to wrist length

5.4.18 Total crotch length

Definition: Distance from the centre of the waist level at the front of the body, through the crotch (inside leg level), to the centre of the back waist level. Avoid any constriction at the crotch (see [Figure 102](#)).

Position: Subject stands erect with legs shoulder width apart.

Equipment: Tape measure.

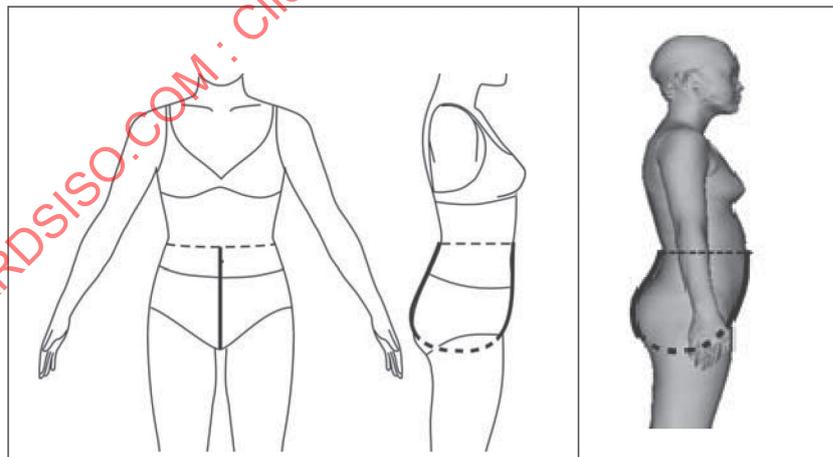


Figure 102 — Total crotch length

5.4.19 Front crotch length

Definition: Distance from the centre of the front waist level, to the centre of the inside of the thigh at the height of the inside leg level (see [Figure 103](#)).

Position: Subject stands erect with legs shoulder width apart and arms abducted to form a 20° angle with the side of the body.

Equipment: Tape measure.

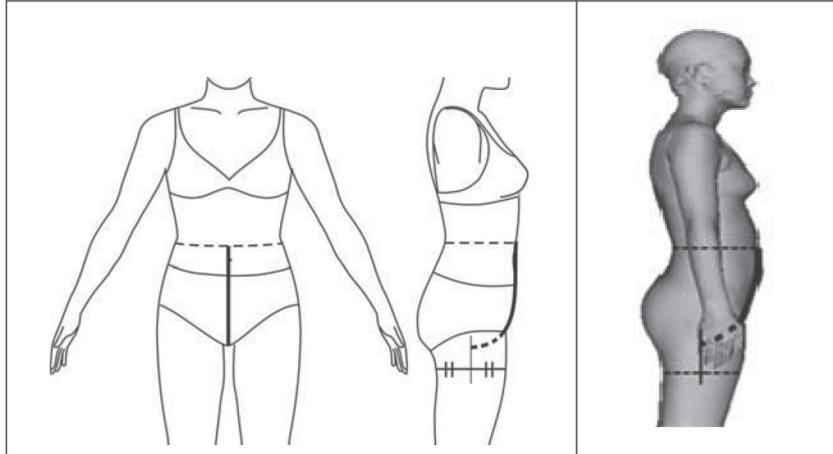


Figure 103 — Front crotch length

5.4.20 Back crotch length

Definition: Distance from the centre of the back waist level, to the centre of the inside of the thigh at the height of the inside leg level (see [Figure 104](#)).

Position: Subject stands erect with legs shoulder width apart and arms abducted to form a 20° angle with the side of the body.

Equipment: Tape measure.

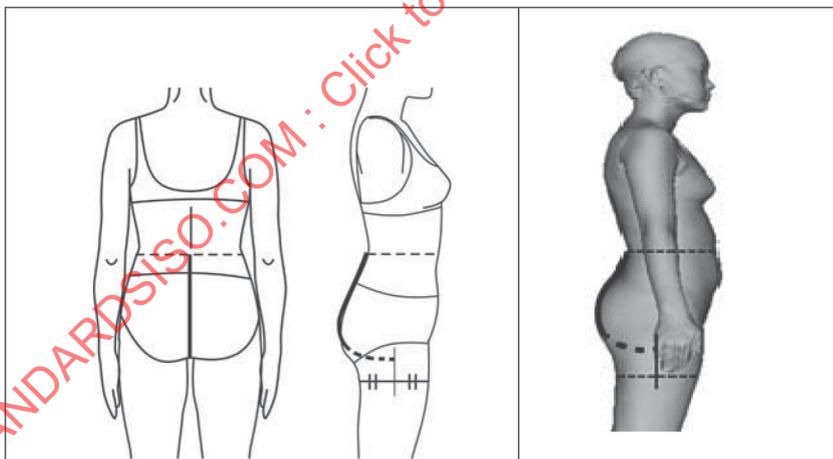


Figure 104 — Back crotch length

5.4.21 Side waist to hip

Definition: Distance down the side of the body from the waist level to the hip level (see [Figure 105](#)).

Position: Subject stands erect with feet together, arm abducted to form a 20° angle with the side of the body and abdomen relaxed.

Equipment: Tape measure.

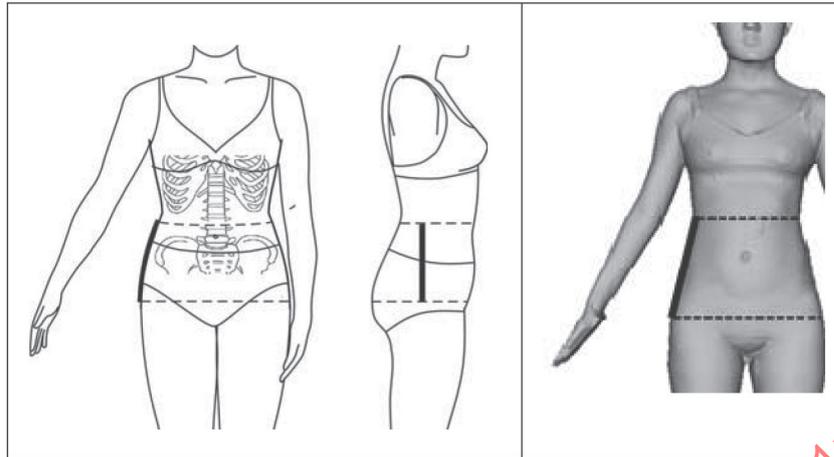


Figure 105 — Side waist to hip

5.4.22 Outside leg length

Definition: Distance down the side of the body from the waist level following the contour to the hip level, then vertically to the ground (see [Figure 106](#)).

Position: Subject stands erect with feet together and arms abducted to form a 20° angle with the side of the body.

Equipment: Tape measure.

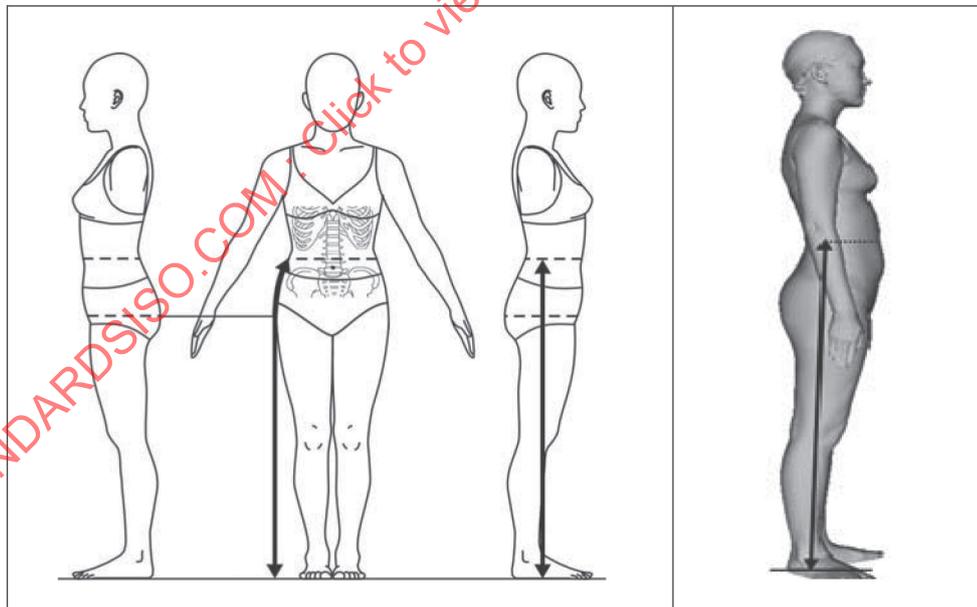


Figure 106 — Outside leg length

5.4.23 Back neck point to ground (contoured)

Definition: Distance from back neck point following the contour of the spinal column to the hip level, then vertically to the ground (see [Figure 107](#)).

Position: Subject stands erect with feet together, arms hanging freely downward, and head in the Frankfurt plane.

Equipment: Tape measure.

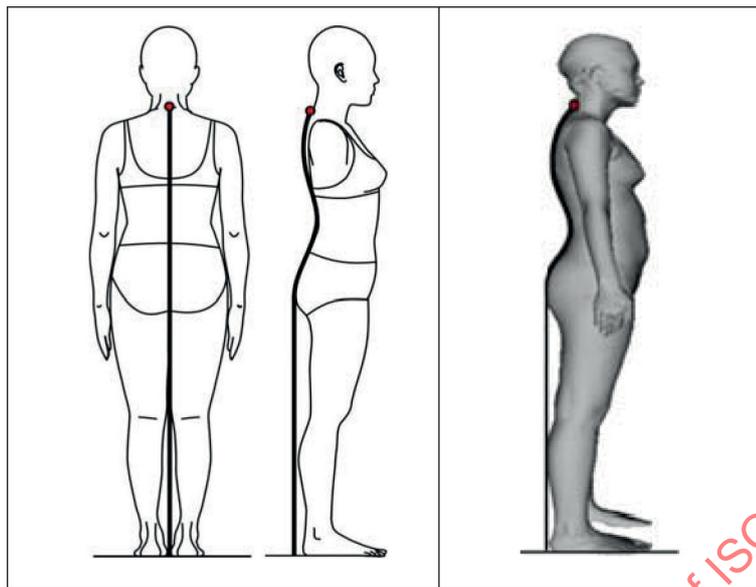


Figure 107 — Back neck point to ground (contoured)

5.5 Hand and foot measurements (Figures 108 to 114)

5.5.1 Hand girth

Definition: Maximum girth over the knuckles (see Figure 108).

Position: Subject holds forearm horizontal with hand outstretched, fingers extended, and thumb abducted.

Equipment: Tape measure.

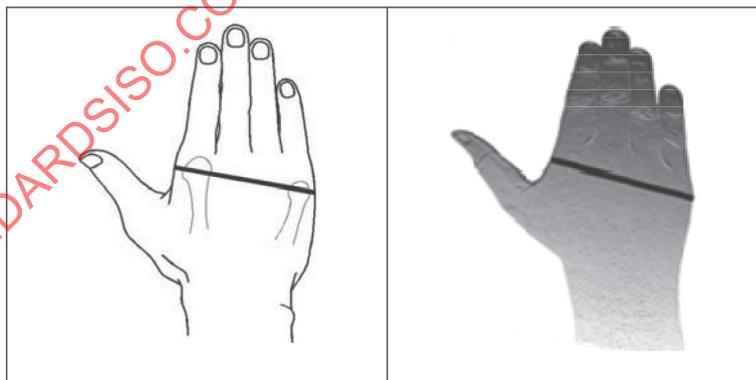


Figure 108 — Hand girth

5.5.2 Hand length (wrist crease)

Definition: Distance from the tip of the middle finger to the most distal wrist crease (see Figure 109).

Position: Subject holds the forearm horizontal with hand and fingers stretched out flat, palm up.

Equipment: Sliding calliper.

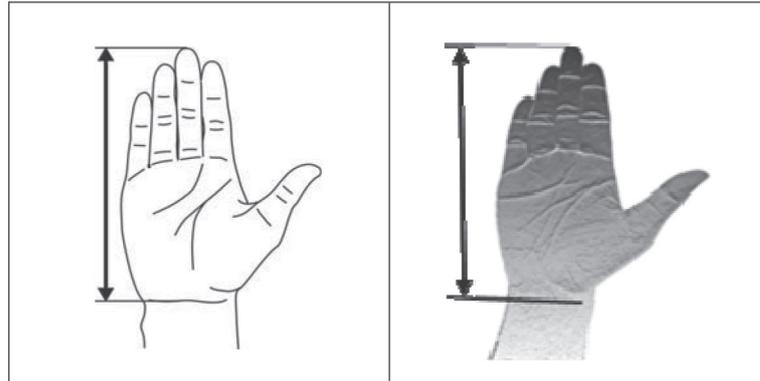


Figure 109 — Hand length

5.5.3 Palm length perpendicular

Definition: Distance from the midpoint of the proximal crease at the base of the middle finger to the most distal wrist crease (see [Figure 110](#)).

Position: Subject holds forearm horizontal with hand stretched out flat, palm up.

Equipment: Sliding calliper.

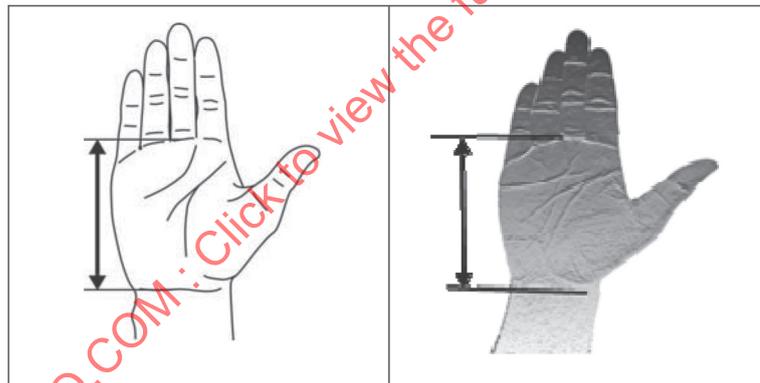


Figure 110 — Palm length perpendicular

5.5.4 Index finger length

Definition: Distance from the tip of the second finger to the proximal finger crease at the base of the index finger (see [Figure 111](#)).

Position: Subject holds forearm horizontal with hand and fingers stretched out flat, palm up.

Equipment: Sliding calliper.

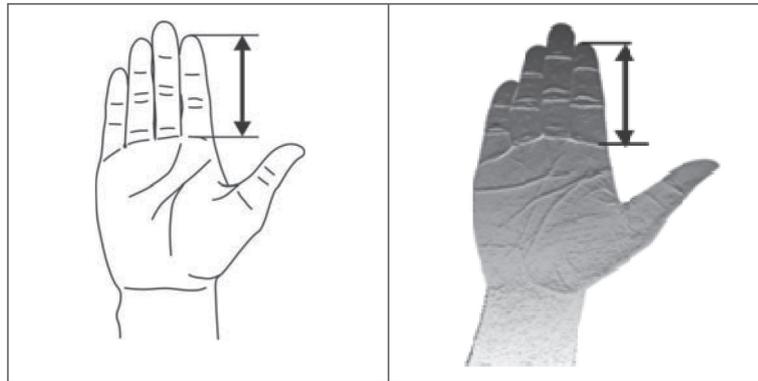


Figure 111 — Index finger length

5.5.5 Foot length

Definition: Distance from rear of the heel to the tip of the longest (first or second) toe, measured parallel to the longitudinal axis of the foot (see [Figure 112](#)).

Position: Subject stands erect with legs shoulder width apart, and weight equally distributed on both feet.

Equipment: Large sliding calliper.

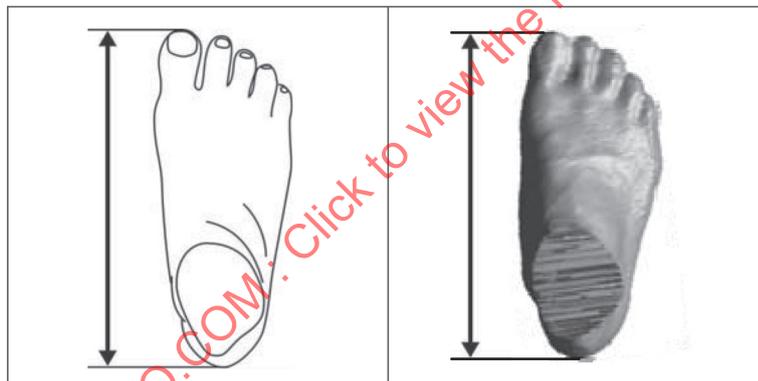


Figure 112 — Foot length

5.5.6 Foot width

Definition: Maximum width of foot across the ball of the foot, measured orthogonal to the longitudinal axis of the foot (see [Figure 113](#)).

Position: Subject stands erect with legs shoulder width apart, and weight equally distributed on both feet.

Equipment: Large sliding calliper.

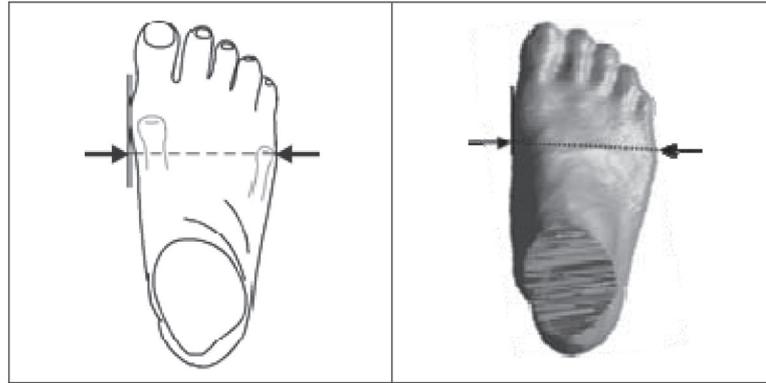


Figure 113 — Foot width

5.5.7 Foot girth

Definition: Maximum girth of the foot measured around the ball of the foot (see [Figure 114](#)).

Position: Subject stands erect with legs shoulder width apart, and weight equally distributed on both feet.

Equipment: Tape measure.



Figure 114 — Foot girth

5.6 Other measurements ([Figure 115](#))

NOTE See [Table C.4](#) for mapping of other measurements to points, levels ([3.1](#)) lines and planes ([3.2](#)).

5.6.1 Body mass

Definition: Total mass (weight) of the body.

Position: Subject stands on a weighing scale.

Equipment: Weighing scale.

NOTE Identical to body mass (weight) in ISO 7250-1.

5.6.2 Shoulder slope

Definition: The value, in degrees, of the angle of inclination with the inclinometer placed on the shoulder following a line joining the shoulder and side neck points (see [Figure 115](#)).

Position: Subject stands erect with the arms hanging freely downward.

Equipment: Inclinometer.

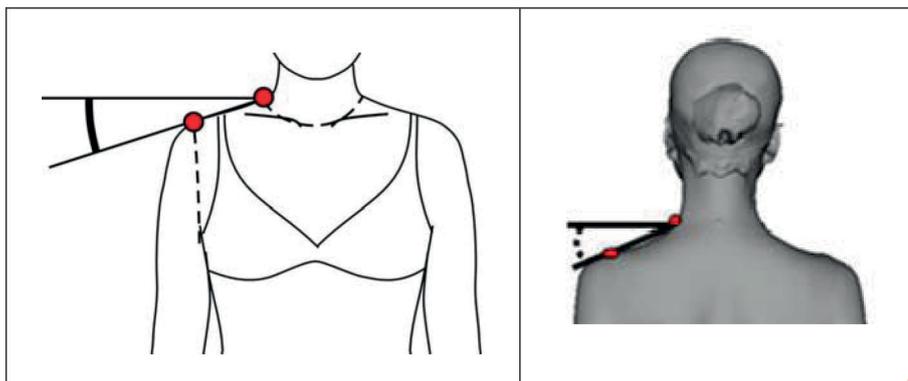


Figure 115 — Shoulder slope

5.7 Calculated measurements (Figures 116 to 122)

NOTE See Table C.4 for mapping of calculated measurements to points, levels (3.1) lines and planes (3.2).

5.7.1 Contoured centre trunk length

Definition: Distance from back neck point to the back waist level, under the inside leg level to the front waist level and up to the front neck point (see Figure 116).

Calculation: Combine back neck point to waist length (5.4.13), total crotch length (5.4.18), front neck point to waist length (5.4.8).

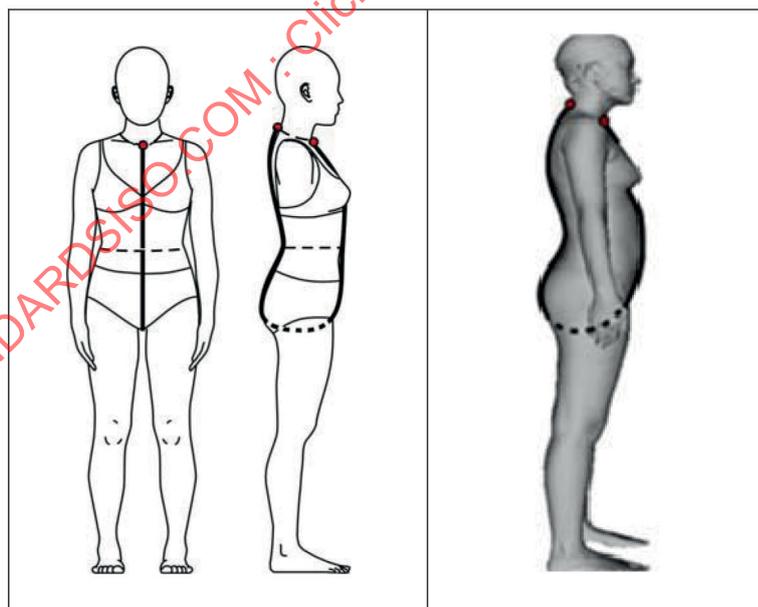


Figure 116 — Contoured centre trunk length

5.7.2 Back neck point to knee

Definition: Distance from back neck point following the contour of the spinal column to the hip level and vertical level of the centre point of knee-cap (see [Figure 117](#)).

Calculation: Back neck point to ground length (contoured) ([5.4.23](#)) minus knee height ([5.1.16](#)).

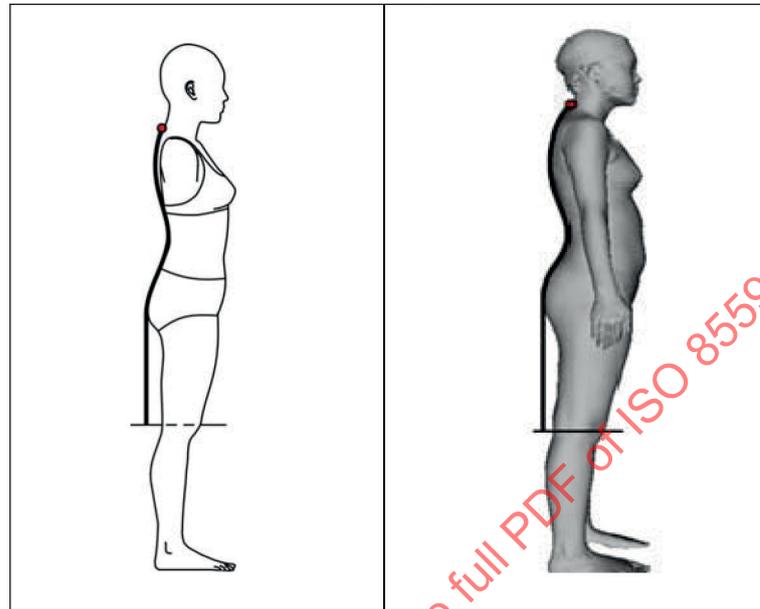


Figure 117 — Back neck to knee

5.7.3 Torso height

Definition: Vertical distance from back neck point to the inside leg level (see [Figure 118](#)).

Calculation: Back neck height ([5.1.5](#)) minus inside leg height ([5.1.15](#)).

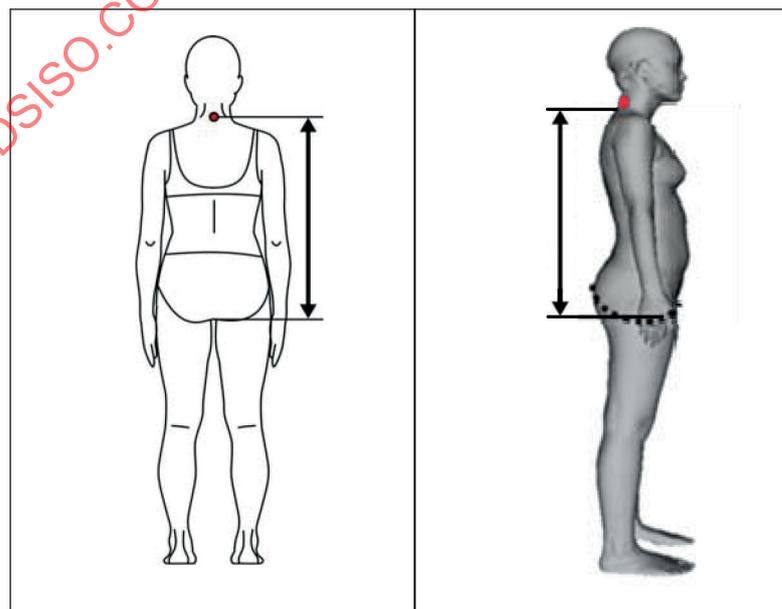


Figure 118 — Torso height

5.7.4 Straight body rise

Definition: Vertical distance between the waist and inside leg levels (see [Figure 119](#)).

Calculation: Waist height ([5.1.10](#)) minus inside leg height ([5.1.15](#)).

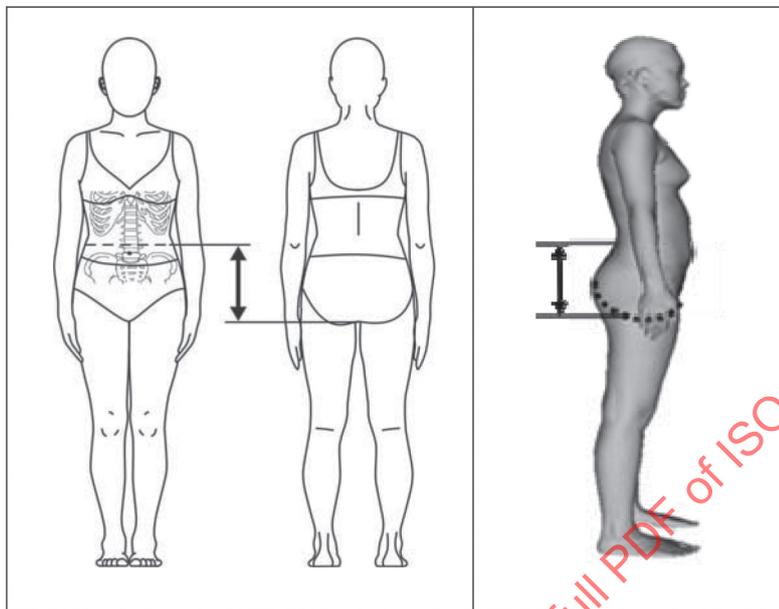


Figure 119 — Straight body rise

5.7.5 Thigh length

Definition: Vertical distance between the inside leg level and the centre point of knee cap (see [Figure 120](#)).

Calculation: Inside leg height ([5.1.15](#)) minus knee height ([5.1.16](#)).

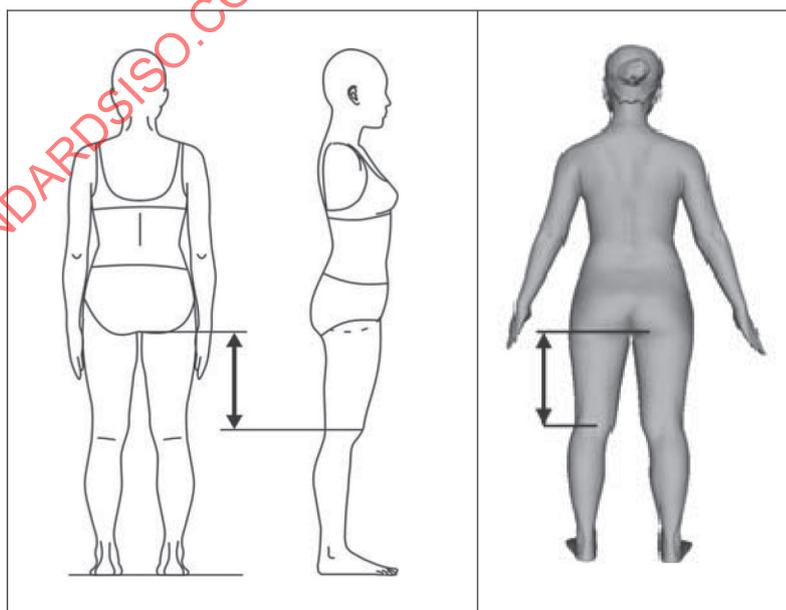


Figure 120 — Thigh length