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Doc No.: PGD 15 (25333) WC

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भारतीय मानक मसौदा

**एर्गोनॉमिक्स – अंतरराष्ट्रीय स्तर पर संगत एंथ्रोपोमेट्रिक डेटाबेस के लिए 3-डी
स्कैनिंग कार्यप्रणाली**

**भाग 2 सतह के आकार का मूल्यांकन प्रोटोकॉल और सापेक्ष लैंडमार्क स्थितियों की पुनः
परीक्षण विश्वसनीयता**

(IS 17030 भाग 2 का पहला पुनरीक्षण)

Draft Indian Standard

**Ergonomics — 3-D Scanning Methodologies for Internationally
Compatible Anthropometric Databases**

**Part 2 Evaluation Protocol of Surface Shape and Repeatability of Relative
Landmark Positions**

(First Revision of IS 17030 Part 2)

ICS 13.180

Ergonomics Sectional Committee, PGD 15

Last date of comment: 25-06-2024

NATIONAL FOREWORD

(Formal Clause of the national foreword shall be added later)

Anthropometric measures are key to many International Standards. These measures can be gathered using a variety of instruments. An instrument with relatively new application to anthropometry is a three dimensional (3-D) scanner. 3-D scanners generate a 3-D point cloud of the outside of the human body that can be used in a number of situations including clothing and automotive design, engineering and medical applications. Recently, digital human models are created from a 3-D point cloud, and used for various applications related to technological design process. Quality control of scan-extracted anthropometric data is important since required quality can differ according to applications.

There are a number of different fundamental technologies, that underlie commercially available systems. These include stereophotogrammetry, ultrasound and light (laser light, white light and infrared), among others. Further, the software that is available to process data from the scan varies in its methods. Additionally, methods to extract landmark positions are different between commercially available systems. In some systems, anthropometrists decide landmark locations and paste marker stickers, and scanner system calculate locations of marker stickers and identify their

names, while in other systems, landmark positions are automatically calculated from the surface shape data. Quality of landmark locations have significant effects on the quality of scan-extracted 1-D measurements as well as digital human models created based on these landmarks.

As a result of differences in fundamental technology, hardware and software, the quality of body surface shape and landmark locations from several different systems can be different for the same individual. Since 3-D scanning can be used to gather these data, it was important to develop an Indian standard that allows users of such systems as well as users of scan-extracted measurements to judge whether the 3-D system is adequate for these needs.

The intent of this part of this standard is to ensure the quality control process of body scanners, especially that of surface shape and locations of landmarks as specified by IS 13214 (Part 1) (Identical to ISO 7250-1).

This standard was originally published in 2019 based on ISO 20685-2 : 2015. The first revision of this standard has been undertaken to align it with the latest version of ISO 20685-2.

This standard has been published in two parts. Other Part in this series is:

Part 1 Evaluation protocol for body dimensions extracted from 3-D body scans

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain terminologies and conventions are, however, not identical to those used in the Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words ‘International Standard’ appear referring to this standard, they should be read as ‘Indian Standard’.
- b) Comma (,) has been used as decimal marker, while in Indian Standards, the current practice to use a full point (.) as the decimal marker.

In this adopted standard, references appear to the following International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with its degree of equivalence for the edition indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 7250-1 : 2017 Basic human body measurements for technological design — Part 1: Body measurement definitions and landmarks	IS 13214 (Part 1) : 2020/ ISO 7250-1 : 2017 Basic human body measurements for technological design : Part 1 Body measurement definitions and landmarks (<i>second revision</i>)	Identical
ISO 20685-1 : 2018 3-D scanning methodologies for internationally compatible anthropometric databases — Part 1: Evaluation protocol for body dimensions extracted from 3-D body scans	PGD 15/23076 3-D scanning methodologies for internationally compatible anthropometric databases : Part 1 Evaluation protocol for body dimensions extracted from 3-D body scans	Identical

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'.

NOTE: The technical content of the draft standard is not available on the website. For details, please refer to ISO 20685-2 : 2023 or contact:

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