INTERNATIONAL STANDARD

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Third edition
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Road vehicles — Design and performance specifications for the WorldSID 50th percentile male side-impact dummy —

Part 3: Mechanical requirements for electronic subsystems

Véhicules routiers — Conception et spécifications de performance pour le mannequin mondial (WorldSID), 50e percentile homme, de choc latéral —

Partie 3: Exigences mécaniques pour sous-systèmes électroniques

Reference number
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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 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 22, *Road vehicles*, Subcommittee SC 36, *Safety and impact testing*.

This third edition cancels and replaces the second edition (ISO 15830-3:2013), which has been technically revised.

The main changes are as follows:

— in Table 1 mounting specifications have been removed;

— in Table 1 specifications for sensor masses have been added;

— in Table 1 angular rate sensor has been added for the head, spine, and pelvis;

— in Table 1 rotational accelerometer has been replaced by angular accelerometer for the head, spine, and pelvis;

— in Table 1 IR-TRACC has been replaced by multidimensional measurement system for the shoulder, thorax, and abdomen;

— in Table 1 full arm sensors have been removed;

— in Table 1 ankle angular displacement sensor has been removed;

— in 4.1.3 all references to specific brands and models of sensors have been removed;

— in 4.2 DAS mass and mass distribution have been replaced by CAD targets for C.G. and mass moment of inertia for the thorax, pelvis, and upper leg assemblies;

— calculation method of distances from IR-TRACC voltage output has been removed;

— information regarding pin codes for connectors has been removed;

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— information regarding sensor output polarities has been replaced by normative reference to SAE J1733.

A list of all parts in the ISO 15830 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.

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Introduction

This third edition of the ISO 15830 series has been prepared on the basis of the existing design, specifications, and performance of the WorldSID 50th percentile adult male side-impact dummy. The purpose of the ISO 15830 series is to document the design and specifications of this side-impact dummy in a form suitable and intended for worldwide regulatory use.

In 1997, the WorldSID 50th percentile adult male dummy development was initiated, with the aims of defining a global-consensus side-impact dummy, with more humanlike anthropometry, improved biofidelity, and increased injury-monitoring capabilities, suitable for example, for regulatory use. Participating in the development were research institutes, dummy and instrumentation manufacturers, governments, and vehicle manufacturers from around the world.

The original WorldSID drawings were available in electronic format. The updates are not available.

In order to apply the ISO 15830 series properly, it is important that all four parts be used together.

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Road vehicles — Design and performance specifications for the WorldSID 50th percentile male side-impact dummy —

Part 3: Mechanical requirements for electronic subsystems

1 Scope

This document specifies mechanical requirements for sensors and in-dummy data acquisition systems (DAS) of the WorldSID 50th percentile side-impact dummy, a standardized anthropomorphic dummy for near-side-impact tests of road vehicles.

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 15830-1, *Road vehicles — Design and performance specifications for the WorldSID 50th percentile male side-impact dummy — Part 1: Vocabulary and rationale*

ISO 15830-4:2022, *Design and performance specifications for the WorldSID 50th percentile adult male side impact dummy — Part 4: User's manual*

ISO 6487, *Road vehicles — Measurement techniques in impact tests — Instrumentation*

SAE J211-1, *Instrumentation for impact test — Electronic instrumentation*

SAE J1733, *Sign convention for vehicle crash testing*

SAE J2570, *Performance specifications for anthropomorphic test device transducers*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15830-1 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 Mechanical requirements for electrical subsystems

4.1 Permissible sensors

4.1.1 General

All sensor locations and the mechanical specifications are specified as "permissible" (i.e. optional) because the decision to use or not to use a given sensor is to be left to the individual relevant regulatory authorities, consumer information organisations, and research or test laboratories. In this way, a given regulation (or laboratory protocol) can indicate which of the permissible sensor's locations described

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