INTERNATIONAL STANDARD

ISO 13216-3

Second edition
2018-10

Road vehicles — Anchorages in vehicles and attachments to anchorages for child restraint systems —

Part 3: Classification of child restraint system and space in vehicle

Véhicules routiers — Ancrages dans les véhicules et attaches aux ancrages pour systèmes de retenue pour enfants —

Partie 3: Classification des dimensions des retenues pour enfants et espace dans le véhicule

Reference number
ISO 13216-3:2018(E)

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Published in Switzerland

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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 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 36.

This second edition cancels and replaces the first edition (ISO 13216-3:2006), which has been technically revised.

The main changes compared to the previous edition are as follows:

— Addition of booster system envelopes ISO/B3, ISO/B2 and ISO/B1;

— Addition of envelope ISO/R2X (modified version of ISO/R2 to provide improved compatibility with the vehicle interior);

— Improved version of the lateral facing envelope (ISO/L1 and ISO/L2);

— Dashed line in seatback area of the ISO/R series of envelopes;

— Corrections in the following envelope drawings: Figures 3, 5 and 7; and

— Addition of recommended CRF masses (Table 1).

A list of all parts in the ISO 13216 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

The basic ISOFIX standard ISO 13216-1 provides requirements needed for positioning of the seat bight anchorages, the geometry around anchorage points and, to some extent, dimensional requirements for forward-facing child restraint systems.

In order to ensure that a child restraint system fits in a vehicle, it is also essential that the vehicle interior and the child restraint system match each other spatially. This document provides requirements for the space needed in vehicles to accommodate child restraints of different types and sizes.

Not all vehicles on the market are capable of accommodating the largest child restraint systems. This document thus provides a classification system to help in judging which types and sizes of child restraint systems will fit in the vehicle. Three size classes of forward-facing systems and three size classes of rearward-facing systems are provided. Two classes of lateral-facing systems are included (dimensionally revised in this second edition). This second edition also incorporates booster system envelopes for size classification of booster systems.

A suggested marking of the space available for the respective child restraint positions in the vehicle, and for the child restraint system dimensions, is included in this document to help consumers choose a child restraint system that is dimensionally suitable for their vehicle. This information is shown in informative Annex A.

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Road vehicles — Anchorages in vehicles and attachments to anchorages for child restraint systems —

Part 3: Classification of child restraint system and space in vehicle

1 Scope

This document classifies the spatial requirements in a vehicle to enable a child restraint system (CRS) to be conveniently mounted. It also specifies the dimensions of child restraint systems, to ensure that they will fit in vehicles.

A classification scheme is provided to determine dimensional compatibility between child restraint systems and the available space at specified seating positions in vehicles. The dimensional requirements refer to forward-facing child restraint systems of three size categories, rearward-facing child restraint systems of three size categories, and lateral-facing child restraint systems of two categories. This edition of the document also incorporates size classification of booster systems.

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 13216-1:1999, *Road vehicles — Anchorages in vehicles and attachments to anchorages for child restraint systems — Part 1: Seat bight anchorages and attachments*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13216-1 and the following 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 https://www.iso.org/obp

3.1
child restraint envelope
envelope simulating the dimensions of a child restraint system of a specified class, used in this document to evaluate the space available for child restraint systems in a vehicle at a specified seating position

Note 1 to entry: The child restraint envelope is also used to identify the dimensional class for a given child restraint system.

3.2
child restraint fixture
CRF
physical implementation of the envelope dimensions

3.3
booster system envelope
envelope describing a booster seat or a booster cushion

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3.4
interference
significant contact with the vehicle interior that impedes the installation of the fixture

4 Vehicle space requirements

4.1 Space required in a vehicle to accommodate specified types and installation modes of child restraint systems

4.1.1 General

Determination of space available in vehicle for child restraint systems is done by use of child restraint envelopes in CAD or physical fixtures (CRF).

It shall be possible to accommodate the child restraint envelopes/fixtures, specified in this document at a specified seating position in a vehicle, without interference with the vehicle interior elements, such as head restraints, dashboard, windshield, or the vehicle seat in front of the seating position.

When checking the child restraint envelope/fixture on a seat, the vehicle seat shall be adjusted longitudinally to its rearmost position and its lowest position.

In addition, when checking the child restraint envelope/fixture in a rear seating position, the related vehicle front seat shall be adjusted as follows:

— longitudinally, to the mid-position between the rearmost position and the foremost position;

— vertically, to the mid position of its height adjustment, if not otherwise recommended by the vehicle manufacturer; and

— the seat backrest may be adjusted, but not to a more upright angle than corresponding to a torso angle of 15°.

NOTE 1 The angle can be measured according to ISO 6549.

The requirements apply for the child restraint envelope/fixture when positioned in the anchorages. It is not required that the child restraint fixture shall move in and out of the seat under these conditions.

Adjustable attachments (adjustable longitudinally between –10 mm and +70 mm) may be used to facilitate the interference checking. Envelope illustrations are showing the most extended position.

When installed on a vehicle seat, the child restraint envelopes in 4.2 to 4.9 should have a pitch angle of 15° ± 10°, which corresponds to a clockwise rotation of the side view (upper-right drawing) in Figures 1 to 11.

NOTE 2 The ISO/F, ISO/R and ISO/B envelope series are fully modular in size, except for the "X" versions. This means that a vehicle compatible with the larger envelope is also compatible with the smaller one(s) of the same category. For example, a vehicle seating position accommodating ISO/R3 also accommodates ISO/R2 and ISO/R1.

4.1.2 Mass of CRF

Child restraint fixtures for practical testing should have a mass according to Table 1 to obtain a realistic compression of the vehicle seat.

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