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

Part 4: Lower tether anchorages

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

Partie 4: Ancrages pour fixation des sangles inférieures

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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).

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

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

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

Lower tether anchorages (LTA), for rearward facing child restraint systems (CRSs) in passenger cars, are used to enhance protection of children in cars. The lower tethers help to reduce CRS rotation in rear impacts, during the rebound phase in frontal impacts, and in rollover events. Lower tethers, attached to the LTA, may be used together with seat bight anchorages according to ISO 13216-1 (ISOFIX), or with other methods for mounting rearward facing CRS in road vehicles, mainly using the vehicle seat belt.

In line with ISOFIX, standardization of LTA enables pre-installed anchorages with adequate performance within a designated zone. Pre-installed anchorages will improve the usability and reliability of attaching the lower tethers. In addition, having dedicated anchorages reduces the risk of tethers routed in a way that can damage the car interior, seat chassis, cables under the seat, etc.

Dedicated pre-installed anchorages will ensure ease-of-use, reduce risk of misuse and simplify the mounting of a rearward facing CRS. With the use of lower tethers and specified LTA and tether connectors (click-in function in analogy with ISOFIX connectors) the CRS can be easily attached.

This document provides requirements and guidelines to facilitate the introduction of lower tether anchorages in passenger cars contributing to ease-of-use, reduction of potential damage to vehicle interior, and increased safety by facilitating increased use of rearward facing CRSs.

Background

Rearward facing CRSs have been available on the market since late 1960s and are used for infants as well as toddlers. In the Nordic countries, they have been used since their introduction as the main CRS for children up to approximately four years of age and have provided evidence of excellent occupant protection.

Most of the large rearward facing CRSs use lower tethers, which are attached to the floor area or seat in front of or below the seating position of the CRS. There is more than 40 years of experience of lower tether usage. Some cars have pre-installed anchorages in which the lower tethers can easily be attached. The most common positions of the anchorages are on the seat rails in front of the CRS (inside, outside, or end of seat rails), but alternative placements are also used.

However, the majority of the vehicles have no pre-installed anchorages, as a consequence the tethers are instead routed around the seat chassis, the seat cushion or other parts that can be accessed.

The primary attachment of the rearward facing CRS is the ISOFIX or the vehicle seat belt. In addition, a support leg is usually used together with the lower tethers. An alternative to the lower tether is to use a bar pressed against the vehicle seat backrest (so-called rebound bar). The rebound bar provides some effect to reduce rotation in rear-end impacts and the rebound phase in frontal impacts, however it is not sufficient for the large rearward facing CRSs, especially when attached using the vehicle seat belt. The lower tethers also provide superior protection in rollover or turnover events.

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

Part 4: Lower tether anchorages

1 Scope

This document establishes the positioning zones, dimensions and general and static strength requirements for lower tether anchorages.

Lower tether anchorages can be used together with seat bight anchorages according to ISO 13216-1, or with other methods for anchoring child restraint systems (CRS) in road vehicles.

This document is applicable to all seating positions, intended by the vehicle manufacturer, for use with rearward-facing CRSs. These seating positions can include outer and mid positions in rear seats (second and third row), as well as the front passenger seat.

This document also specifies requirements and strength testing of retrofit lower tether anchorages.

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 13216-2:2004, *Road vehicles — Anchorages in vehicles and attachments to anchorages for child restraint systems — Part 2: Top tether anchorages and attachments*

ISO 13216-3, *Road vehicles — Anchorages in vehicles and attachments to anchorages for child restraint systems — Part 3: Classification of child restraint system and space in vehicle*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13216-2 and ISO 13216-3, and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
lower tether anchorage
LTA
anchorage on the vehicle seat track or on or close to the vehicle floor to which a *lower tether* (3.4) can be attached

[SOURCE: ISO 29061-1:2010, 3.15, modified — The term "rebound tether anchorage" has been deleted and the phrase "rebound tether" has been deleted in the definition before "lower tether".]

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