

AS 4034.1:2024



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Australia



Motor vehicles — Cargo barriers for occupant protection

Part 1: Cargo barriers



AS 4034.1:2024

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- Consumers Federation of Australia
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Preface

This Standard was prepared by the Australian members of the joint Standards Australia/Standards New Zealand Committee ME-84, Cargo Restraint Systems for Occupant Protection in Light Vehicles, to supersede AS/NZS 4034.1:2008.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this document as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this document is to provide manufacturers, suppliers and users with the requirements for cargo barriers to protect passengers and drivers who are seated in front of cargo in a motor vehicle in the event of a collision.

This document forms part of the AS 4034 series on cargo barriers for the protection of occupants of motor vehicles. A list of all parts in the series can be found in the Standards Australia online catalogue.

The major changes in this edition are as follows:

- (a) Expansion on the interaction between cargo barriers and airbags during a crash.
- (b) Inclusion of instructions by digital means.
- (c) Clarification of requirements relating to head restraints.

The term “normative” has been used in this Standard to define the application of the appendix to which it applies. A “normative” appendix is an integral part of a Standard.

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Introduction

The range of performance requirements in this document is intended to decrease the impact hazard in an accident to occupants from cargo carried within the interior of vehicles.

Cargo-related injuries contribute significantly to the total of injuries sustained in traffic accidents. In the past, little attention was paid to the hazard from unrestrained cargo when it intruded into the driver and passenger zone during frontal impacts or when the vehicle overturned.

Accident statistics do not quantify the risk that cargo creates; however, a thorough analysis of accidents with cargo in the cabin demonstrates the urgent need for improved cargo retention. Initial crash test program results for vehicles containing unrestrained cargo were of concern because they highlighted the potential for severe injury to occupants and great damage to vehicles.

The cargo barriers specified in this document are marked with a rated single mass capacity for cargo positioned against the cargo barrier. The effect of not placing cargo against the rear face of the cargo barrier can increase the impact energy that must be dissipated by a factor of up to five times.

The performance requirements in this document are based on the restraint of the nominated capacity of cargo as a single mass during frontal impact of the vehicle specified in *Australian Design Rules*. From an economic viewpoint, it is impractical to verify the performance of the cargo barrier by conducting this type of frontal impact test for motor vehicles. As an alternative, a drop weight test method is specified with equivalent energy dissipation levels.

The single mass rating simulates the most severe condition and, if the cargo were to consist of a number of items of smaller mass, a far greater mass of cargo might be restrained by the cargo barrier. However, because of the variety of cargo compositions possible, this document does not specify a rating for such conditions. Deceleration levels generated in simulated crash impacts are of the order of 20 *g*.

Two test methods—a drop test and a horizontal test with equivalent energy dissipation—are specified in order to demonstrate conformance to the impact strength requirements.

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Motor vehicles — Cargo barriers for occupant protection

Part 1: Cargo barriers

1 Scope and general

1.1 Scope

This document specifies a range of performance requirements including load ratings for cargo barriers and their design, installation and usage in vehicles for the protection of occupants.

This document does not cover other types of dividing devices, such as dog nets, which are not intended specifically to reduce injuries caused by the cargo shifting under crash conditions.

1.2 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.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 2700, *Colour Standards for general purposes*

AS 4034.2, *Motor vehicles—Cargo barriers for occupant protection, Part 2: Partial cargo barriers*

AS/NZS 2272, *Plywood—Marine*

SAE J850, *Fixed Rigid Barrier Collision Tests*

SAE J2481, *Dynamic Simulation Sled Testing*

1.3 Terms and definitions

For the purpose of this document, the definitions in the [Australian Design Rule – Definitions and Vehicle Categories](#) and those below apply.

NOTE If conflicting definitions occur, those below take precedence.

1.3.1

anchorage

part of a vehicle designed to transfer loads from a cargo barrier to the vehicle

Note 1 to entry: It includes bolts or screws and other hardware for the attachment of the cargo barrier, and it may be fitted as original vehicle equipment or supplied as part of the cargo barrier assembly.

1.3.2

cargo barrier

dividing structure of a vehicle that separates cargo space from occupant space

Note 1 to entry: It is manufactured to withstand the test forces and penetration requirements of this document.

1.3.3

front of the cargo barrier

side of a cargo barrier that faces the normal direction of travel of the vehicle

1.3.4

may

indicates the existence of an option

1.3.5**shall**

indicates that a statement is mandatory

1.3.6**should**

indicates a recommendation

1.4 Configurations

This document specifies three types of cargo barrier:

- (a) A cargo barrier for installation in a vehicle in a single position, see [Figure 1.4\(A\)](#).
- (b) A multi-position cargo barrier to suit a number of alternative positions in a vehicle and with provision for easy relocation from one position to another; for example, in a station wagon if the cargo barrier is installed either immediately behind the driver's seat [see [Figure 1.4\(B\)](#) (a)] or immediately behind the second row of seats [see [Figure 1.4\(B\)](#) (b)].

NOTE 1 Multi-position cargo barriers may be designed to allow for different heights of opening when relocated to alternative positions in a vehicle by having a single movable or detachable section of the cargo barrier, see [Figures 1.4\(C\)](#).

NOTE 2 Movable and detachable sections of cargo barriers may also include sliding sections.

- (c) A cargo barrier fitted to a utility behind the driver's cabin, see [Figure 1.4\(D\)](#). The vehicle body may or may not be fitted with a separate external canopy.

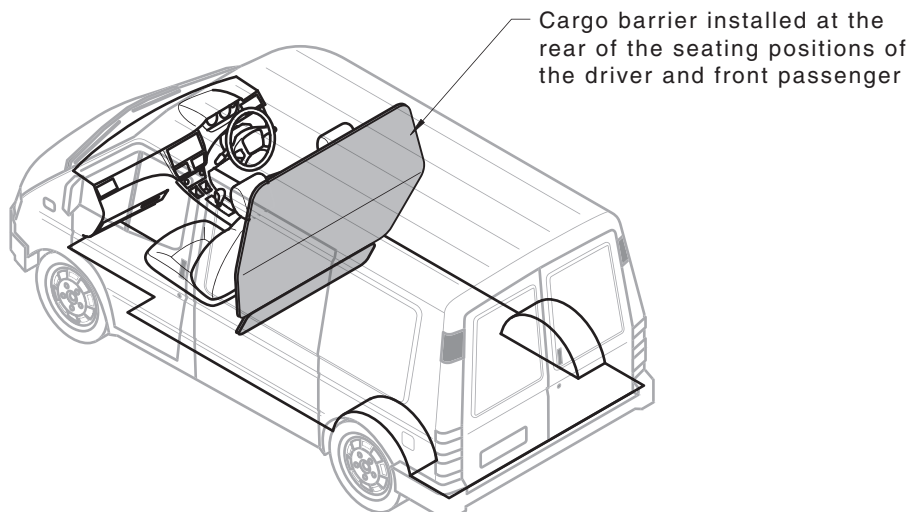
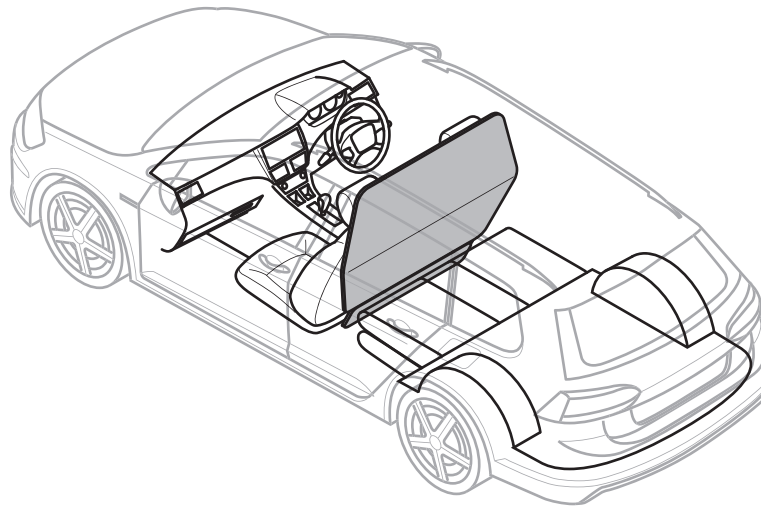
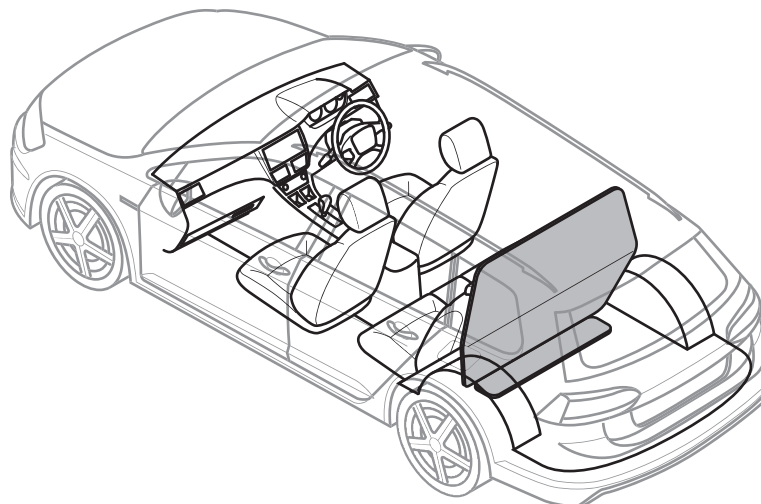


Figure 1.4(A) — Typical full, single-position cargo barrier

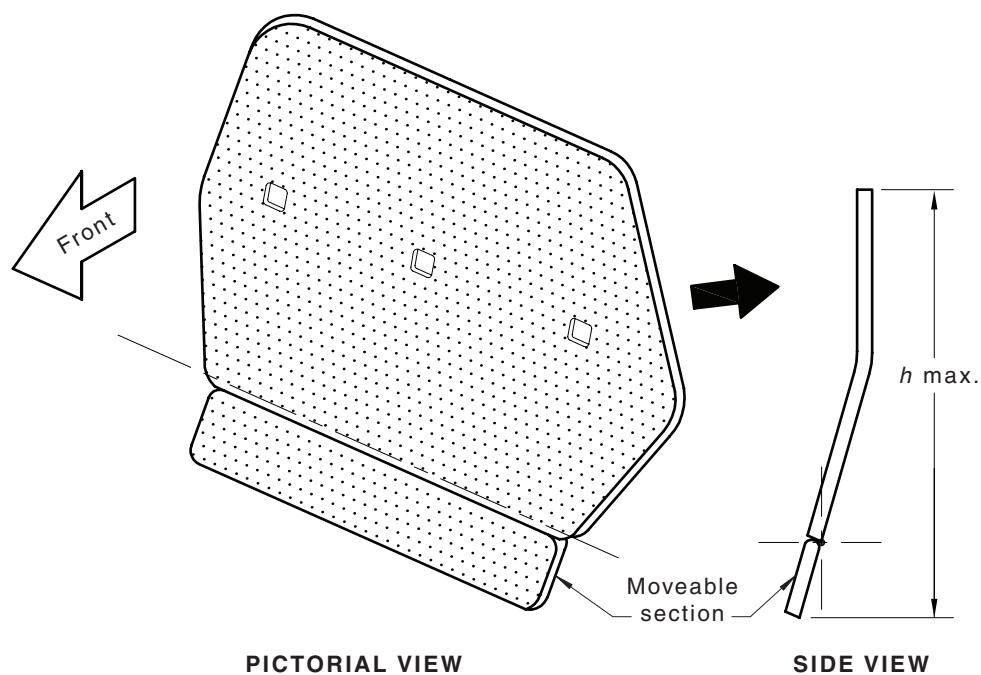


(a) Multi-position cargo barrier in the forward position

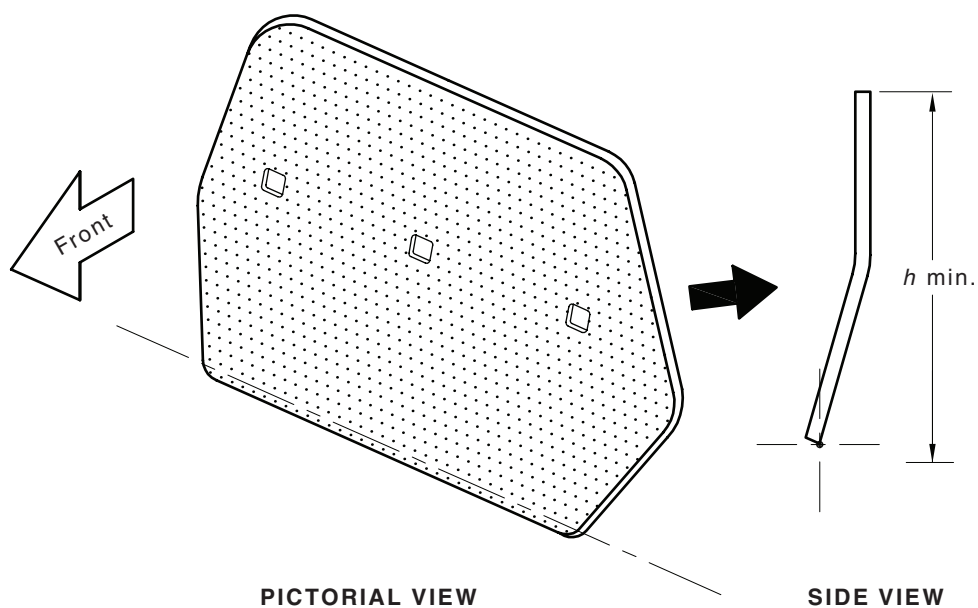


(b) Multi-position cargo barrier in the rearward position

Figure 1.4(B) — Typical multi-position cargo barrier with a movable or detachable section



(a) Installed to suit taller opening height



(b) Installed to suit shorter opening height

NOTE Cargo barrier with a movable or detachable section and three child restraint upper anchorage strap cut-outs.

Figure 1.4(C) — Typical cargo barrier with a movable or detachable section

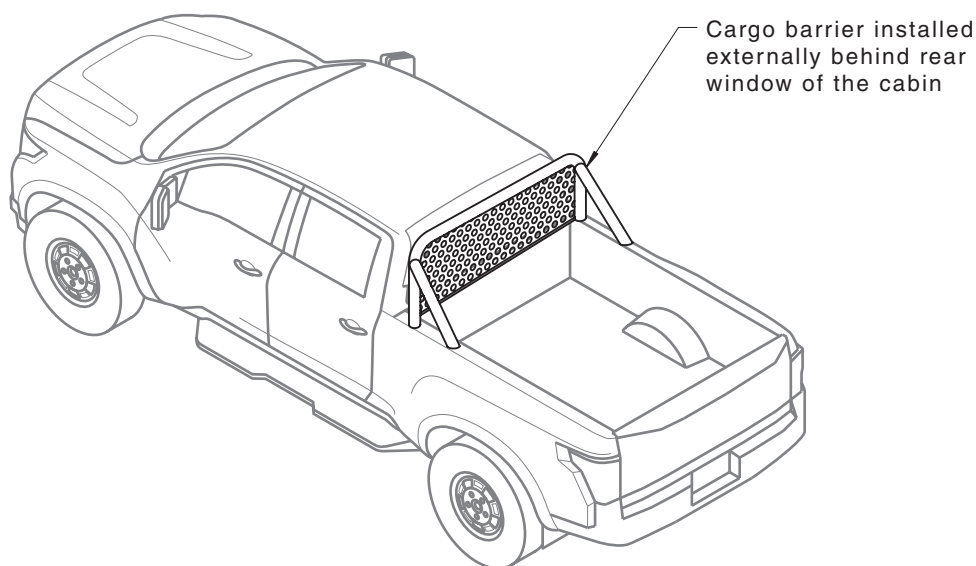


Figure 1.4(D) — Typical cargo barrier for utility

1.5 Cargo barrier ratings

Each cargo barrier shall have a nominated rating. The rating is the single mass value used to determine the energy level for the impact strength requirement in [Clause 3.1](#).

A full cargo barrier, whether a single-position or a multi-position type, shall —

- (a) have a rating of not less than 60 kg; and
- (b) be rated as a single mass of 60 kg or in incremental steps of 10 kg.

2 Design and installation requirements

2.1 General

Seat anchorage, seat belt anchorage or child restraint anchorages shall not be used —

- (a) other than for their intended purpose; or
- (b) for the attachment of a cargo barrier in a vehicle.

NOTE The installation of a cargo barrier has the potential to degrade a vehicle's compliance with legislation, such as Australian Design Rules. Refer to relevant legislation or regulations to avoid potential non-compliance.

If airbags are fitted to a vehicle, the cargo barrier shall be as specified in [Clause 2.15](#).

2.2 Deformation

The deformation of a cargo barrier under deceleration or frontal impact results in transverse displacement of the cargo, see [Figure 2.2\(A\)](#). The attachment method, if incapable of providing a degree of tolerance to these transverse displacements, will be subject to additional loadings. Therefore, the method of attachment of a cargo barrier to a vehicle should be designed to avoid or tolerate these displacements. The deformation limit for a movable or detachable section of a cargo barrier is shown in [Figure 2.2\(B\)](#).

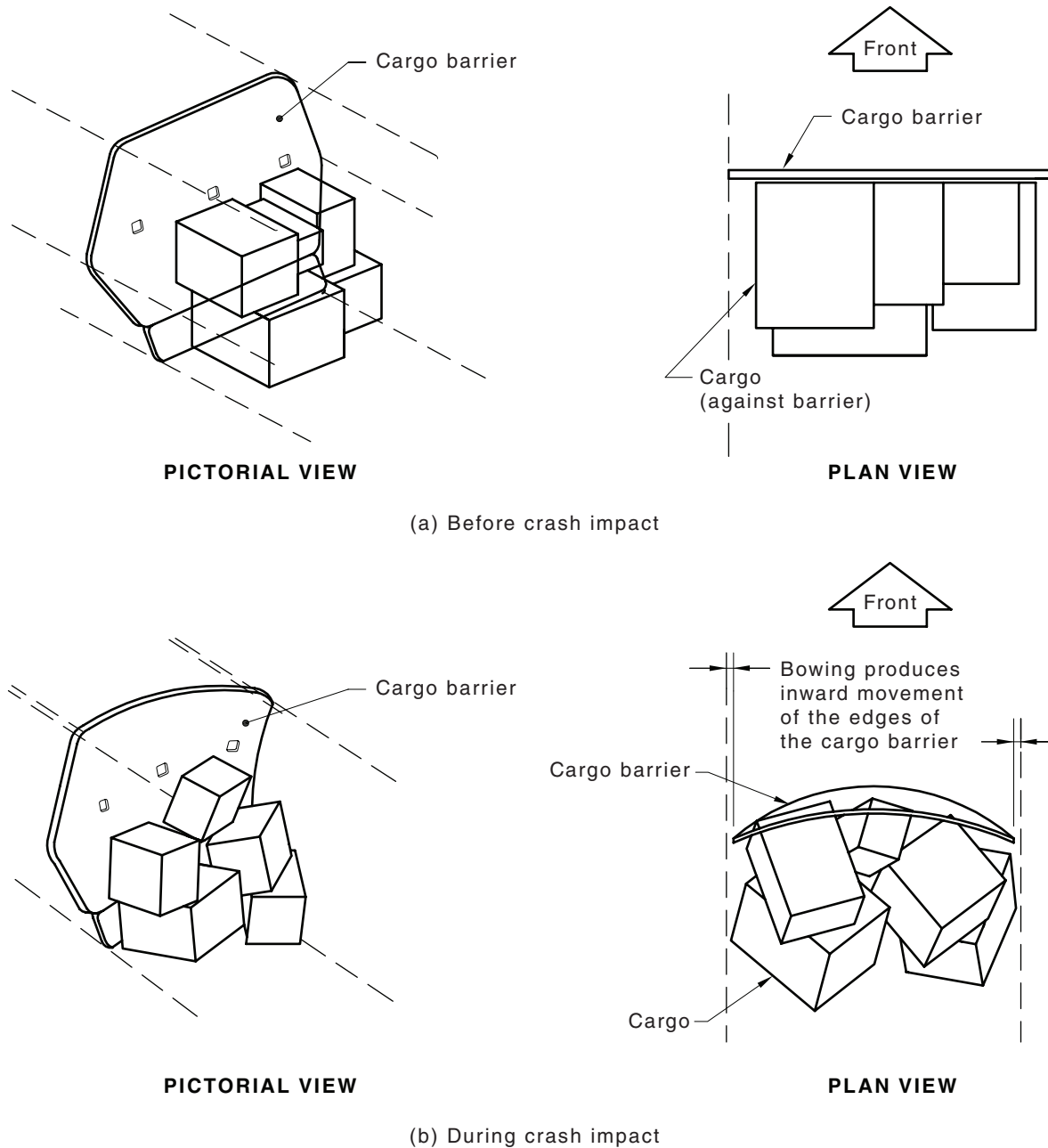


Figure 2.2(A) — Cargo barrier deformation

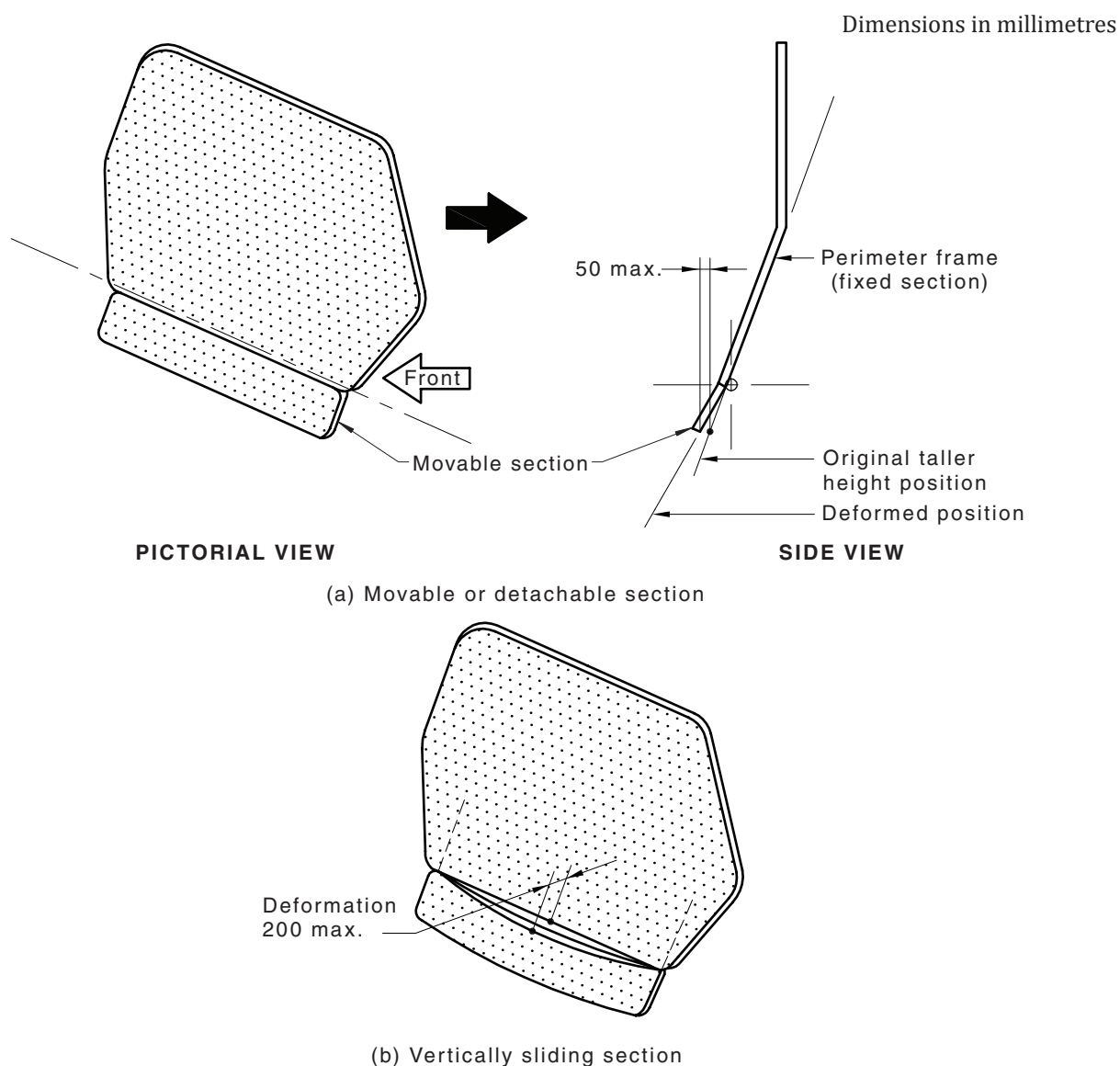


Figure 2.2(B) — Deformation limit for a movable or detachable section of a cargo barrier

2.3 Means of escape

If a cargo barrier is designed for, and installed in, a vehicle that is not otherwise equipped with an internal rear compartment door release, egress from the vehicle shall be provided by the manufacturer of the cargo barrier for a body between 50th percentile 6-year-old child and 95th percentile adult male, see [Table 2.3](#) and [Clause 2.14](#).

Table 2.3 — Anthropometric data

	50th percentile 6-year-old child	95th percentile adult male
Erect sitting height, mm	645	965
Hip breadth, mm	215	415
Hip circumference, mm	605	1 200
Waist circumference, mm	530	1 080
Chest depth, mm	160	265

Table 2.3 (continued)

	50th percentile 6-year-old child	95th percentile adult male
Chest circumference, mm	595	1 130
Shoulder height, mm	415	680
Mass, kg	21.4 ± 3	97.5 ± 5
SOURCE Table 1, Dummy dimensions, Australian Design Rule 4. Sourced from the Federal Register of Legislation on 23 November 2022. For the latest information on Australian Government law go to https://www.legislation.gov.au		
NOTE Tolerance on all dimensions is ± 5 %.		

2.4 Anchorages

Cargo barrier anchorages that are installed in the vehicle by the vehicle manufacturer should be used for attaching the cargo barrier to the vehicle. If cargo barrier anchorages are not provided by the vehicle manufacturer, anchorages specifically manufactured for the attachment of cargo barriers shall be supplied for installation in the vehicle in accordance with this document.

Unless authorized by the vehicle manufacturer, no cargo barrier anchorage or any anchorage mounting holes shall be located within 100 mm from the centre of a seat anchorage, seat belt anchorage, or child restraint anchorage. Cargo barrier anchorages shall be installed in a part of the vehicle body structure that meets the performance requirements of this document.

2.5 Head restraints

Cargo barriers shall not interfere with the function of any head restraints that are supplied with the vehicle operating through their full range of adjustment.

NOTE The installation of a cargo barrier has the potential to degrade a vehicle's compliance with legislation, e.g. Australian Design Rules. Refer to relevant legislation or regulations to avoid potential non-compliance.

If head restraints are provided with the vehicle, a label shall —

- (a) be attached to the barrier in a prominent position (i.e. behind the head restraint);
- (b) carry the wording, "Head restraints should not be removed"; and
- (c) be written in English in permanent, legible, black characters not less than 2.0 mm high.

2.6 Seat belt clearance

An installed cargo barrier shall not —

- (a) invalidate the fitting requirements of a seat belt;
- (b) interfere with the operation of a seat belt;
- (c) deflect the webbing of any seat belt fitted, or intended to be fitted, to a vehicle from its intended line of action; or
- (d) obstruct access to seat belt adjusting devices.

NOTE Refer to ADR 4, ADR 5 and AS/NZS 2596 for fitting requirements for seat belts.

2.7 Installation of child restraint systems

2.7.1 General

If anchorages for child restraints are installed rearward of the cargo barrier, the upper anchorage strap of a child restraint shall be able to pass through the cargo barrier.

All specified child restraint positions relevant to the intended positions of a single-position cargo barrier or to all positions of a multi-position cargo barrier shall be as specified in [Clause 2.7.2](#).

2.7.2 Child restraint upper-anchorage strap cut-outs

If relevant child restraint anchorages are located rearward of the cargo barrier in any installed position, cut-outs for child restraint upper anchorage straps shall be provided.

Cut-outs for child restraint upper anchorage straps shall meet the following requirements:

- (a) All edges of the cut-out shall be smooth and have a minimum radius as specified in [Clause 2.14](#).
- (b) Cut-outs shall have —
 - (i) an internal width of 65 mm $\pm$ 5 mm; and
 - (ii) an internal height of not less than 35 mm and no greater than 50 mm.
- (c) The vertical and horizontal centre-line of a cut-out shall be within 25 mm of the line between the relevant child restraint anchorage and a point on the seating reference plane at the shoulder reference point, refer to ADR 34.

2.8 Attachments

Cargo barriers shall meet the performance requirements of [Section 3](#). Any attachment to the rear of the cargo barrier shall be as specified in [Clause 2.13](#).

2.9 Clearance between cargo barrier and vehicle

Clearances between the cargo barrier perimeter and the vehicle interior contour (measured to the trim) shall be as shown in [Figure 2.9\(A\)](#) for full, single-position or multi-position cargo barriers.

A multi-position cargo barrier shall be as shown in [Figure 2.9\(A\)](#) in at least one of its installed positions. Its top and bottom clearances at each seating reference plane shall be as shown in [Figure 2.9\(A\)](#) Detail A and Detail E in all installed positions.

NOTE This may require the inclusion of a movable or detachable section, see [Figure 2.9\(B\)](#) and [Clause 2.11](#).

For a utility vehicle, the cargo barrier shall cover the full width and height of the rear windscreen when viewed from the rear of the vehicle.