AUSTRALIAN RAIL INDUSTRY STANDARDS ORGANISATION

AS 7520.3

Rolling Stock Body Structural Requirements – Part 3: Passenger

STANDARDS

Australian STANDARD

Advancing safety and productivity

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Development of this Standard was prepared by an Australian Rail Industry Standards Organisation (ARISO) Development Group consisting of representatives from the following organisations:

Transport for NSW, Rail Tram and Bus Union, Queensland Rail, Bradken, Monash IRT, Downer, and Alstom.

The Rolling Stock Standing Committee verified that ARISO's accredited process was followed in developing the product, before the ARISO Board approved the document for publication.

ARISO wishes to acknowledge the positive contribution of subject matter experts in the development of this Standard. Their efforts ranged from membership of the Development Group through to individuals providing comments on a draft of the Standard during the open review.

I commend this Standard to the Australasian rail industry as it represents industry good practice and has been developed through a rigorous process.

Alan Fedda
Chief Executive Officer
Australian Rail Industry Standards Organisation

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Document history

Publication Version	Effective Date	Reason for and Extent of Change(s)
2025	24 December 2025	This document has been reviewed to ensure it remains relevant and applicable. The latest review assessed the content, confirming that while updates were made to align with current industry practices, technologies, and regulatory requirements, the original authorship and copyright have been acknowledged as required.

Approval

Name	Date
Australian Rail Industry Standards Organisation	27 November 2025

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Preface

This standard was prepared by the Rolling Stock Body Structural Requirements – Part 3: Passenger Development Group, overseen by the ARISO Rolling Stock Standing Committee.

Objective

The objective of this document is to describe requirements for the structural strength of railway passenger rolling stock including crew cars.

The main purpose of the requirements are to:

(a) prescribe the minimum structural integrity levels of the vehicle body to ensure safe performance under the operating conditions that the rolling stock will be subject to; and

(b) minimize risks to persons (including train crew, train passengers and persons external to the train) and damage to railway infrastructure and other rolling stock in the event of collisions or derailments.

This document is intended to compliment the rolling stock compliance certification process outlined in AS 7501, including all vehicle types such as new, modified and heritage rolling stock.

The document has been significantly amended from the previous version with major changes throughout the document. It is recommended a thorough comprehensive review is undertaken for any users of the current version that will be applying this new revision of AS 7520.3.

Compliance

There are four types of provisions contained within Australian Standards developed by ARISO:

(c) Requirements.

(d) Recommendations.

(e) Permissions.

(f) Constraints.

Requirements – it is mandatory to follow all requirements to claim full compliance with the Standard. Requirements are identified within the text by the term ‘shall’.

Recommendations – do not mention or exclude other possibilities but do offer the one that is preferred. Recommendations are identified within the text by the term ‘should’.

Recommendations recognize that there could be limitations to the universal application of the control, i.e. the identified control is not able to be applied or other controls are more appropriate or better.

For compliance purposes, where a recommended control is not applied as written in the standard it could be incumbent on the adopter of the standard to demonstrate their actual method of controlling the risk as part of their WHS or Rail Safety National Law obligations. Similarly, it could also be incumbent on an adopter of the standard to demonstrate their method of controlling the risk to contracting entities or interfacing organisations where the risk may be shared.

Permissions – conveys consent by providing an allowable option. Permissions are identified within the text by the term ‘may’.

Constraints – provided by an external source such as legislation. Constraints are identified within the text by the term ‘must’.

ARISO Standards address known hazards within the railway industry. Hazards, and clauses within this Standard that address those hazards, are listed in Appendix A.

Appendices in ARISO Standards may be designated either “normative” or “informative”. A "normative" appendix is an integral part of a Standard and compliance with it is a requirement, whereas an "informative" appendix is only for information and guidance.

Commentary

Commentary *C Preface*

This Standard includes a commentary on some of the clauses. The commentary directly follows the relevant clause, is designated by ‘C’ preceding the clause number and is printed in italics in a box. The commentary is for information and guidance and does not form part of the Standard.

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Section 1 Scope and general

1.1 Scope

This document applies to:

a) new and modified passenger rolling stock and crew cars; and

b) the design, construction and maintenance of passenger rolling stock and crew cars.

The requirements mandated in this document do not retrospectively apply to any existing rolling stock other than rolling stock which is being modified in areas covered by this document so far as reasonably practicable.

The objective of this document is to mitigate, as far as is reasonably practicable, safety risks to the passenger rolling stock and crew car occupants due to derailments, collisions and roll-overs throughout the design life of the rolling stock asset. This document adopts European Norm (EN) structural integrity and crashworthiness standards as the foundation for designing and constructing passenger rolling stock and crew cars. It is further supplemented with additional international, national, and local standards and requirements to facilitate customization for the intended Australian rail networks. This approach also considers local safety incidence experience and collision scenarios not explicitly covered in the EN standards.

This document does not include the operation of rolling stock or cover rolling stock used on light rail, cane railways and monorail networks. Still, items from this document can be applied to such systems as deemed appropriate by the relevant RTO.

This document excludes passenger rolling stock utilizing alternate fuels such as hydrogen, liquified natural gas (LNG) and compressed natural gas (CNG).

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:

- AS 3990, *Mechanical equipment - Steelwork*
- AS 4100, *Steel structures*
- AS 7470, *Human Factors Integration in Engineering Design - General Requirements*
- AS 7501, *Railway rolling stock - Rolling stock certification*
- AS 7507, *Rolling stock outlines*
- AS 7509, *Rolling stock – Dynamic behaviour*
- AS 7522, *Access and Egress*
- AS/NZS 1554, *Structural steel welding*
- AS/NZS 2080, *Safety glass for land transport*
- AS/NZS 2208, *Safety glazing materials in buildings*
- EN 12663-1, *Railway applications – Structural requirements of railway vehicle bodies - Part 1: Locomotives and passenger rolling stock (and alternative method for freight wagons)*
- EN 15085 Series, *Welding of railway vehicles and components*
- EN 15152, *Railway applications - Front windscreens for train cabs*
- EN 15227, *Railway applications - Crashworthiness requirements for railway vehicles*