

STANDARDS

AS 7489

Rolling Stock Passanger and Seating Appointments





Notice to users

This RISSB product has been developed using input from rail experts from across the rail industry and represents good practice for the industry. The reliance upon or manner of use of this RISSB product is the sole responsibility of the user who is to assess whether it meets their organisation's operational environment and risk profile.

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

RISSB 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.

Damien White

Chief Executive Officer

Rail Industry Safety and Standards Board

Keeping RISSB products up-to-date

Products developed by RISSB are living documents that reflect progress in science, technology and systems. To maintain their currency, RISSB products are periodically reviewed, and new editions published when required. Between editions, amendments may be issued. Products developed by RISSB could also be withdrawn.

It is important that readers assure themselves that the RISSB product they are using is current, including any amendments that have been issued since the product was published. Information about RISSB products, including amendments, can be found by visiting www.rissb.com.au.

RISSB welcomes suggestions for improvements and asks readers to notify us immediately of any apparent inaccuracies or ambiguities. Members are encouraged to use the change request feature of the RISSB website at: http://www.rissb.com.au/products/. Otherwise, please contact us via email at info@rissb.com.au or write to Rail Industry Safety and Standards Board, PO Box 518 Spring Hill Qld 4004, Australia.

Document details

First published as: AS 7489:2024

ISBN: 978 1 76139 914 5

Document history

Publication Version	Effective Date	Reason for and Extent of Change(s)
2024	10 December 2024	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
Rail Industry Safety and Standards Board	25 November 2024

Copyright

© RISSB

All rights are reserved. No part of this work can be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of RISSB, unless otherwise permitted under the Copyright Act 1968.

Published by the Rail Industry Safety and Standards Board, PO Box 518 Spring Hill Qld 4004, Australia.





Preface

This standard was prepared by the Rolling Stock Passenger Seating and Appointments Development Group, overseen by the RISSB Rolling Stock Standing Committee.

Objective

The objective of this Standard is to provide best practice and performance-based outcomes in the design, manufacture and maintenance of rolling stock passenger seating, fittings and fixtures.

Compliance

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

- (a) Requirements.
- (b) Recommendations.
- (c) Permissions.
- (d) 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.

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'.

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.

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

Appendices in RISSB 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.



Table of Contents

Section 1	Scope and general	6
1.1	Purpose	6
1.2	Scope	6
1.3	Normative references	6
1.4	Defined terms and abbreviations	7
Section 2	Human factors	11
Section 3	General requirements	
3.1	Layout and configuration	
3.2	Priority seats for passengers with disabilities and/or mobility issues	
3.3	Seating in allocated spaces	
3.4	Design integration for passenger interface	
3.5	Forces required to operate seats	
3.6	Vehicle dynamic characteristics	
Section 4	Anthropometric data	
Section 5	Crashworthiness and occupant impact interfaces	
Section 6	Fire performance	18
Section 7	Accessibility, access and egress	
Section 8	Seat design	
8.1	General	
8.2	Dimensional requirements	20
8.3	Additional recommended requirements	25
8.4	Seat comfort	28
8.5	User testing	28
8.5.1	User trialling	28
8.5.2	Utilization of off-the-shelf solutions	32
Section 9	Accelerated life cycle testing	33
Section 10	Passenger seating appointments	35
10.1	General	35
10.2	Brackets, connection to vehicle body and fasteners	35
10.3	Armrests	35
10.4	Headrests	35
10.5	Footrests	35
10.6	Grab handles	35
10.7	Grab poles	36
10.8	Seat mechanisms	36
10.9	Tables	36
10.10	Coat hooks	36
10.11	Seat power outlets and infotainment systems	36



Section 11	Safety in design	37
Section 12	Vandalism resistance and cleaning	38
Section 13	Maintenance	39
Section 14	Environmental management systems and sustainability	40
Appendix A	Passenger comfort options (Informative)	
Appendix B	Passenger seat and appointment type examples (Informative)	
Appendix C	Hazard register (Informative)	59
Bibliography	(informative)	60
Figures		
Appendix Figu	re B-1 Example longitudinal seating – metro	43
Appendix Figu	re B-2 Example longitudinal seating vestibule – heavy rail	43
	re B-3 Example wheelchair flip-up longitudinal seating – heavy rail	
Appendix Figu	re B-4 Example wheelchair flip-up longitudinal seating – heavy rail	44
	re B-5 Example wheelchair flip-up longitudinal seating – light rail	
	re B-6 Example tip-over transverse seating - short distance train	
	re B-7 Example single tip-over transverse seating – short distance train	
	re B-8 Example tip-over transverse seating – medium distance train	
	re B-9 Example single transverse seat – light rail	
	re B-10 Example priority seat – heavy rail	
	re B-11 Example priority seat – light rail re B-12 Long distance train seating	
	re B-13 Example fixed transverse seating – heavy rail	
	re B-14 Example fixed transverse seating – heavy rail	
	re B-15 Example fixed transverse seating – light rail	
	re B-16 Example headrest – medium distance train	
	re B-17 Example headrest – long distance train	
Appendix Figu	re B-18 Example footrest – medium distance train	52
	re B-19 Example armrest 1	
	re B-20 Example armrest 2	
	re B-21 Example armrest 3	
	re B-22 Example armrest – long distance train	
	re B-23 Example grab polere B-24 Example seat back grab handle	
	re B-25 Example seat back grab handle	
	re B-26 Example seat back grab handle	
	re B-27 Example seat recliner actuator	
	re B-28 Example rotatable seat mechanism	
Tables		
	ensional Requirements	
	itional Dimensions	
• •	e A-1 Comfort	
Appendix Tabl	e A-2 Features	42



Section 1 Scope and general

1.1 Purpose

The purpose of this Standard is to provide best practice and performance-based outcomes in the design, manufacture and maintenance of rolling stock passenger seating and appointments.

1.2 Scope

This Standard is applicable to passenger seating and appointments for new or substantially passenger area modified passenger rolling stock that operate on a network.

Commentary C1.2

Substantially passenger area modified passenger seating and appointments areas on rolling stock refers to vehicles undergoing significant internal modifications involving changes to passenger seating and appointments (e.g., mid-life upgrades, refurbishments, or life extensions).

Crew seating is excluded from this Standard.

It is recognized that some RISSB products referenced in this Standard as either normative or informative do not specifically include light rail vehicles and/or metro rolling stock. However, for the purposes of this Standard, light rail vehicles and metro rolling stock are included and any referenced standards that do not specifically include light rail vehicles and/or metro rolling stock may be applied as deemed appropriate for this type of rolling stock.

This Standard does not specifically cover rolling stock used for heritage operations, crew cars, sleeper cars and dining cars. However, items from this Standard may be applied to such systems as deemed appropriate by the relevant rolling stock operator (RSO).

1.3 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 3000, Electrical installations (known as the Australian/New Zealand Wiring Rules)
- AS 7470, Human Factors Integration Engineering Design General Requirements
- AS 7488, Railway rolling stock Locomotive and passenger vehicle flooring
- AS 7521, Interior Crashworthiness
- AS 7522, Access and egress
- AS 7529.3, Australian Railway Rolling Stock Fire Safety, Part 3: Passenger
- AS 7530, Electrical systems
- Australian Government Disability Standards for Accessible Public Transport Guidelines (DSAPT)
- BS EN 1335.1, Office furniture. Office work chair Dimensions. Determination of dimensions
- BS EN ISO 7250.1, Basic human body measurements for technological design, Body measurement definitions and landmarks
- GMRT 2100, Rail Vehicle Structures and Passive Safety
- iMOVE 6-002, Australian Size Variation for Design, M004: Detailed anthropometry dataset V2.0 30/06/2023

NOTE: Documents for informative purposes are listed in a Bibliography at the back of the Standard.

