

AS 7520.3: 2012



RAIL INDUSTRY SAFETY AND STANDARDS BOARD

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Australian Railway Rolling Stock - Body Structural Requirements - Part 3 - Passenger Rolling Stock

STANDARD



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This Australian Railway Standard AS 7520.3 *Railway Rolling Stock- Body Structural Requirements- Part 3: Passenger Rolling Stock* was prepared by the RISSB *Body Structural Requirements Development Group*. It was signed off by the RISSB *Body Structural Requirements Development Group* and *Rolling Stock Standing Committee* in June 2012 and subsequently by the Development Advisory Board (DAB) in June 2012. The DAB confirmed that the process used to develop the standard was in accordance with the RISSB accredited development process. On the 23rd August 2012 the RISSB Board approved the Standard for release. This Standard was published on the RISSB website (www.rissb.com.au) on the 7th September 2012.



Kevin Taylor
General Manager
Rail Industry Safety and Standards Board

The following organisations were represented on the *Access and Egress Development Group*:

ARTC	GSR	Pacific National	QR National
Queensland Rail	RailCorp	RTBU	UGL
TransAdelaide	V/Line		

This Standard was issued on four occasions for open review as RDS 7520.3 and was independently validated before being signed off and the approvals were granted.

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AS 7520.3 Railway Rolling Stock- Body Structural Requirements- Part 3: Passenger Rolling Stock

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AS 7520.3-2012 Australian Standard - Railway Rolling Stock Body Structural Requirements - Part 3: Passenger Rolling Stock

SECTION	CLAUSE	REQUIREMENTS	TYPE	HAZARD	IC	Background Information
1		INTRODUCTION	HED			
1.1		IMPORTANT NOTICE AND DISCLAIMER	HED			
	1	The Rail Industry Safety & Standards Board ("RISSB") provides a range of products, collectively called the "RISSB Products", including:	SUP			
	1(a)	- Standards;	SUP			
	1(b)	- Codes of Practice;	SUP			
	1(c)	- Rules;	SUP			
	1(d)	- Guidelines; and	SUP			
	1(e)	- Handbooks.	SUP			
	2	RISSB does not undertake a full risk assessment of the RISSB Products it develops due to the diverse operating environments operating across Australia.	SUP			
	3	Rather it identifies the hazards that must be addressed on the Australian Rail Network and develops products to accommodate these.	SUP			
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	5	This would include a risk assessment.	SUP			
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	8	Adherence to the RISSB Products does not replace or exclude the application of such legislative requirements.	SUP			
	9	Users are responsible for making their own enquiries in relation to the application of legislation, and the framers of the RISSB Products accept no responsibility in this regard.	SUP			
	10	Adherence to the RISSB Products does not necessarily ensure compliance with any relevant national guidelines, standards and codes of practice.	SUP			
	11	Users are responsible for making their own enquiries in relation to compliance with national standards, guidelines and codes of practice.	SUP			

AS 7520.3-2012 Australian Standard - Railway Rolling Stock Body Structural Requirements - Part 3: Passenger Rolling Stock

SECTION	CLAUSE	REQUIREMENTS	TYPE	HAZARD	IC	Background Information
	12	While all reasonable care has been taken in the preparation of this RISSB Product, it is provided to rail operators without any legal liability on the part of RISSB and RISSB publishers, authors, consultants and editors each take no responsibility for loss suffered by any person resulting in any way from the use, or reliance on this RISSB Product.	SUP			
	13	© Rail Industry Safety and Standards Board	SUP			www.rissb.com.au
1.2		DOCUMENT CONTROL	HED			
1.2.1		Identification	HED			
	1	Document Title : Railway Rolling Stock - Body Structural Requirements - Part 3: Passenger Rolling Stock	SUP			
	2	Number: AS 7520.3	SUP			
	3	Version: 1.0	SUP			
	4	Publication Date: 3 September 2012	SUP			
1.2.2		Preparation and Approval	HED			
	1	Prepared by: RISSB Body Structural Requirements Development Group	SUP			
	2	RISSB Board Approval Date: 23 August 2012	SUP			
1.2.3		Distribution and Change	HED			
	1	The current version of this standard is available from the RISSB website at www.rissb.com.au .	SUP			
	2	RISSB standards are subject to review at a period not exceeding five years from their date of publication.	SUP			
1.2.4		Document History	HED			
1.2.4.1		Changes To Previous Version	HED			
	1	Nil - First Publication	SUP			
1.2.4.2		Previous Published Versions	HED			
	1	This Standard replaces sections 3.3.7, 3.3.9, 3.3.10, Diagram 3-16, 8, 10.2.8, 10.2.9, 11, 12.2.2, 12.3, 13.3.2 to 13.3.4, 13.3.12, 13.7.1, 13.7.2.3.1 to 13.7.2.3.3, 13.7.2.6, 14, 15, 16, 20, 21 and 24.8 of the ROA Manual of Engineering Standards & Practices, published in 1992.	SUP			
1.3		CONTENT	HED			
1.3.1		Table of Contents	HED			
	1	1. INTRODUCTION	SUP			
	2	1.1 Disclaimer	SUP			
	3	1.2 Document Control	SUP			
	4	1.3 Content	SUP			

AS 7520.3-2012 Australian Standard - Railway Rolling Stock Body Structural Requirements - Part 3: Passenger Rolling Stock

SECTION	CLAUSE	REQUIREMENTS	TYPE	HAZARD	IC	Background Information
	5	1.4 Purpose	SUP			
	6	1.5 Scope	SUP			
	7	1.6 Compliance	SUP			
	8	1.7 Referenced Documents	SUP			
	9	1.8 Definitions	SUP			
	10	2. DESIGN VERIFICATION	SUP			
	11	3. CONSTRUCTION	SUP			
	12	4. MAINTENANCE	SUP			
	13	5. VEHICLE MASSES	SUP			
	14	6. STRUCTURAL RATING	SUP			
	15	7. PROOF LOADS	SUP			
	16	7.1 Longitudinal Proof Loads	SUP			
	17	7.2 Vertical Proof Loads	SUP			
	18	8. FATIGUE LOADS	SUP			
	19	9. CRASHWORTHINESS PERFORMANCE	SUP			
	20	9.1 Collision Performance	SUP			
	21	9.2 Rollover Performance	SUP			
	22	10. COWCATCHERS	SUP			
	23	11. WHEEL GUARDS	SUP			
	24	12. DOORS	SUP			
	25	13. GLAZING	SUP			
	26	13.1 Front Windscreen	SUP			
	27	13.2 Side Windows	SUP			
	28	13.3 Interior Windows	SUP			
	29	14. TOWING FIXTURES	SUP			
	30	15. BODY MOUNTED EQUIPMENT	SUP			
	31	15.1 General Requirements				
	32	15.2 Shock / Minor Impact Loading	SUP			
	33	16. FUEL TANKS	SUP			
	34	17. CONTAINERS AND REMOVABLE STRUCTURES WITH CORNER FITTINGS	SUP			
	35	18. TANKS AND FITTINGS ON RAIL TANK CARS	SUP			
	36	19. ROADTRAILER TRAILER	SUP			
	37	20. EQUIPMENT ON INFRASTRUCTURE MAINTENANCE ROLLING STOCK	SUP			
1.3.2		Spreadsheet Layout	HED			
	1	The "SECTION" plus "CLAUSE" columns provide a unique identifier for each sentence/row/requirement in the document, eg this is sentence 1.3.2.1.	SUP		X	

AS 7520.3-2012 Australian Standard - Railway Rolling Stock Body Structural Requirements - Part 3: Passenger Rolling Stock

SECTION	CLAUSE	REQUIREMENTS	TYPE	HAZARD	IC	Background Information
	2	The "REQUIREMENTS" column contains the main body of the document.	SUP		X	
	3	White-coloured cells in the "REQUIREMENTS" column contain the document requirements.	SUP		X	
	4	Green-coloured cells in the "REQUIREMENTS" column contain additional supporting information.	SUP		X	
	5	Grey-coloured cells in the "REQUIREMENTS" column contain the section heading descriptions.	SUP		X	
	6	The "TYPE" column categorises each row into one of supporting information (SUP), a heading (HED), a mandatory requirement (MAN) or a recommended requirement (REC).	SUP		X	
	7	The "HAZARD" column lists the hazard number, taken from the Rollingstock Hazard Trees, for the hazard(s) being controlled by each requirement.	SUP		X	Refer to the RISSB website for the latest Rollingstock Hazard Trees : www.rissb.com.au
	8	The "IC" column identifies, by an "X" in the cell, those items that may need to be considered for inclusion in an Interface Coordination Plan.	SUP		X	Interface Coordination Plans are a requirement within the AS 4292 suite of standards.
	9	The "Background Information" column contains details about the source or rationale of a sentence/row/requirement.	SUP		X	
	1.4	PURPOSE	HED			
	1	This document describes requirements for the structural strength of railway passenger vehicle bodies.	SUP			
	2	The main purpose of the requirements is to:	SUP			
	2(a)	prescribe the minimum structural integrity level of the vehicle body to ensure safe performance under normal operating conditions.	SUP			
	2(b)	minimise risks to train crew and members of the general public in the event of collisions or derailments.	SUP			
1.5		SCOPE	HED			
	1	This document applies to new and modified passenger vehicles.	SUP			
	2	The requirements mandated in this standard do not retrospectively apply to any existing vehicles other than vehicles which are being modified in areas covered by this standard so far as reasonably practicable.	SUP			
	3	The document covers the design, construction and maintenance of rolling stock.	SUP			
	4	Operation of rolling stock is not covered.	SUP			
	5	Rolling stock used on light rail, cane railway and monorail networks are not covered.	SUP			Currently excluded.
1.6		COMPLIANCE	HED			

AS 7520.3-2012 Australian Standard - Railway Rolling Stock Body Structural Requirements - Part 3: Passenger Rolling Stock

SECTION	CLAUSE	REQUIREMENTS	TYPE	HAZARD	IC	Background Information
	1	There are two types of controls contained within the RISSB Australian Rolling Stock Standards – 1. mandatory (MAN) requirements and 2. recommended (REC) requirements.	SUP			
	2	Both of these types of control address hazards that are deemed to require controls on the basis of existing Australian and international rolling stock practices and standards.	SUP			
	3	A mandatory requirement is a requirement that the standard sees as the only way of treating the hazard.	SUP			
	4	A recommended requirement is one where the standard recognises that there are limitations to the universal application of the requirement and that there may be circumstances where the control cannot be applied or that other controls may be appropriate or satisfactory, subject to agreement with the Track Manager and/or Rail Safety Regulator.	SUP			
	5	Recommended requirements in the RISSB Australian Rolling Stock Standards are considered when compliance to the standards is being assessed.	SUP			
	6	Refer to AS 7501 for details on the compliance assessment process.	SUP			
1.7		REFERENCED DOCUMENTS	HED			
1.7.1		Normative References	HED			
	1	The following documents are indispensable for the application of this Standard:	SUP			
	1(a)	AAR standard S-5506 Performance Requirements for Diesel Electric Locomotive Fuel Tanks, 2001	SUP			
	1(b)	AAR standard S-580 Locomotive Crashworthiness Requirements, 2008	SUP			
	1(c)	ANSI Z97.1 - American National Standard For Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test	SUP			
	1(d)	AS/NZS 1554 Structural steel welding	SUP			
	1(e)	AS/NZS 1665 Welding of aluminium structures	SUP			
	1(f)	AS/NZS 2080 Safety Glass for Land Transport	SUP			
	1(g)	AS/NZS 2208 Safety glazing materials in buildings	SUP			
	1(h)	British Railways Board specification BR 566 - High impact resistant windscreens	SUP			
	1(i)	EN 12600 Glass in building - Pendulum test - Impact test method and classification for flat glass	SUP			
	1(j)	EN 14752 Railway applications - Bodyside entrance systems	SUP			
	1(k)	EN 15152 Railway applications - Front windscreens for train cabs	SUP			

AS 7520.3-2012 Australian Standard - Railway Rolling Stock Body Structural Requirements - Part 3: Passenger Rolling Stock

SECTION	CLAUSE	REQUIREMENTS	TYPE	HAZARD	IC	Background Information
	1(l)	EN 15227 Railway applications - Crashworthiness requirements for railway vehicles	SUP			
	1(m)	FRA standard 49 CFR Part 223 Safety Glazing Standards - Locomotives, passenger cars and cabooses.	SUP			
	1(n)	UK RSSB standard GM/RT2130 Vehicle fire safety and evacuation, Issue 3: 2010	SUP			
	1(o)	UK RSSB standard GM/RT2100 Requirements for Rail Vehicle Structures, Issue 5: 2012	SUP			
	1(p)	UIC Code 566 Loadings of coach bodies and their components	SUP			
1.7.2		Informative References	HED			
	1	The following referenced documents are cited in this Standard for information only:	SUP			
	1(a)	AAR Manual of Standards and Recommended Practices Section C, Part II - Design, Fabrication and Construction of Freight Cars	SUP			
	1(b)	APTA SS-C&S-034-99 - Standard for the design and construction of passenger railroad rolling stock	SUP			
	1(c)	AS/NZS 1664 Aluminium structures	SUP			
	1(d)	AS 4100 Steel structures	SUP			
	1(e)	AS 4292 Railway safety management	SUP			
	1(f)	AS 4991 Lifting devices	SUP			
	1(g)	AS 7501 Railway rolling stock - Rolling Stock Certification	SUP			
	1(h)	AS 7520.1 - Railway Rolling Stock - Body Structural Requirements - Part 1: Locomotive Rolling Stock	SUP			
	1(i)	AS 7522.3 Railway Rolling Stock - Access and Egress - Part 3: Passenger Rolling Stock	SUP			
	1(j)	BS 7608 Code of practice for fatigue design and assessment of steel structures	SUP			
	1(k)	EN 1993-1-9 Eurocode 3: Design of Steel Structures - Part 1-9: Fatigue	SUP			
	1(l)	EN 12663 Railway applications - Structural requirements of railway vehicle bodies	SUP			
	1(m)	FRA standard 49 CFR Part 238 Passenger equipment safety standards	SUP			
1.8		DEFINITIONS	HED			
	1	AAR: Association of American Railroads	SUP			http://www.aar.org/
	2	Anti Climb Device: A device fitted at vehicle ends that is engaged, or will engage, with a device on an impacting, or adjacent vehicle during a collision which resists the over-riding of one vehicle by another.	SUP			
	3	APTA: American Public Transportation Association	SUP			http://www.apta.com/