



AUSTRALIAN RAIL TRACK CORPORATION LTD

Discipline
Engineering Standard

Category
Rolling Stock

Minimum Operating Standards for Rolling Stock

WOS 01

Applicability

ARTC Network wide	
New South Wales	✓
Western Jurisdiction	
Victoria	

Primary Source
(RIC Standard RSS 001 Version 2.0)

Document Status Record

Status	Date	Prepared	Reviewed	Endorsed	Approved
Issue 1 Revision 2	Dec 05	Standards & Systems (refer to Primary Source)	Standards & Technical Services Engineer	GM Infrastructure Strategy & Performance M Owens	Safety Committee 12/08/2004

List of Amendments

Issue	Date	Clause	Description
1.1	01/09/2004	All	Reformatting to ARTC Standard
1.2	07/12/2005	Cover	Cover page reformatted and disclaimer amended

Disclaimer

This document is for internal use by the Australian Rail Track Corporation Ltd ("ARTC") only and may **not** be relied on by any other party. ARTC:
1. does not accept any liability or responsibility whatsoever for this Document in respect of any use or reliance upon it by any other party; and
2. does not provide any warranty as to the accuracy or reliability of this Document.

About This Standard

To all accredited owners/operators of rolling stock operating on the Australian Rail Track Corporation rail network.

In accordance with the requirements of the NSW Rail Safety Act, 1993, Australian Rail Track Corporation, as the infrastructure owner, must nominate, submit and maintain controlled copies of suitable standards and procedures for those activities, functions and responsibilities which affect the safety of its railway.

This publication forms part of the Australian Rail Track Corporation's Accreditation with the Department of Transport. Under the terms of the Australian Rail Track Corporation's Accreditation, amendments or variations to this document as they pertain to safety must be submitted by the Australian Rail Track Corporation to and be approved by the Director-General, in accordance with the Act. It is expected that Operators will cite this publication in their own Accreditation as evidence of a rolling stock-infrastructure interface agreement.

This publication, referred to as the Rolling Stock Operation Standards (WOS's) "Minimum Operating Standards for Rolling Stock", sets out the Australian Rail Track Corporation's minimum technical interface requirements for rolling stock operating on its rail network. These requirements encompass system, safety critical and environmental interface requirements which are designed to ensure an equitable, safe and viable operating environment for all operators. These Rolling Stock Operation Standards and the principle behind them are called up in the Schedules of the Access Agreements.

Any proposed departure, on the part of rolling stock owner/operators, from the **mandatory** standards/requirements specified herein shall be nominated and submitted in writing to the Australian Rail Track Corporation. Such departures will only be published as amendments to this document with the agreement of the Australian Rail Track Corporation and approval from the Department of Transport.

This document also contains recommended/advisory practices to assist and guide owner/operators in meeting rail industry accepted standards for their rolling stock design, operation and maintenance. These recommended/advisory practices have been included where they are related to the Australian Rail Track Corporation's mandatory interface standards or requirements. This publication however, does not provide a complete set of minimum standards for a rail operator. For example maintenance regimes and practices are not covered at all. It is requested that any departure from these recommended/advisory standards be advised in writing to Australian Rail Track Corporation to ensure there is no conflict in application or system performance.

This is a controlled document, for those on the controlled mailing list, and when it becomes necessary to amend the document or part thereof, amendments will be issued in the form of complete units. All amended pages will show the month and year of publication. The current status sheet will identify the current issue of each unit and will give instructions on how to amend the manual.

It is the responsibility of the registered holder of this manual to ensure that it is kept up to date.

Contents

Rolling Stock Operation Standards

000 Series	General
	010 Introduction
100 Series	General interface requirements
	100 Introduction
	110 Rolling stock outline interface
	120 Track interface
	130 Overhead power interface
	140 Vehicle to vehicle interface
	150 Environmental interface
	160 Signalling interface
	170 Vehicle recovery interface
	180 Automatic equipment identification interface
	190 Train radio interface (not issued)
200 Series	Common interface requirements
	200 Introduction
	210 Wheels
	211 Design and manufacture
	212 Minimum operational requirements
	220 Axles
	221 Design and manufacture
	222 Minimum operational requirements
	230 Wheel and axle assembly
	240 Axle bearing assembly
	250 Bogie frames and associated componentry
	260 Vehicle suspension
	261 Suspension springs
	262 Suspension damping
	263 Resilient suspension components
	270 Brakes & pneumatic equipment
	271 Brake equipment compatibility
	272 Brake blocks and disc pads
	273 Pneumatic equipment
	280 Vehicle compatibility tests
	281 Static rolling stock outline test
	282 Static vehicle weigh test
	283 Static vehicle twist test
	284 Static vehicle/bogie swing test
	285 Static vehicle/vehicle swing test
	286 Static brake test
	287 Brake performance test
	288 Ride performance test
	289 Kinematic rolling stock outline test
	290 Pitch and bounce performance test
	291 Rock and roll test
	292 Environmental tests
	293 Signal visibility test
	294 Electrical safety inspection
	295 Signal compatibility test
	296 Signal interference test

Vehicle type specific interface requirements

300 Series **Locomotive specific interface requirements**

- 300 Introduction
- 310 Bogie Components
- 320 Brakes & pneumatic equipment
 - 321 Dynamic/regenerative brake
- 330 Body & underframe
- 340 Vehicle performance
 - 341 Traction performance
 - 342 Braking performance
 - 343 Locomotive ride performance
- 350 Safety equipment
- 360 Locomotive specific requirements
 - 361 Diesel/electric or diesel hydraulic locomotives
 - 362 Electric locomotives
 - 363 Steam locomotives
 - 364 Driver only operation
 - 365 Remote controlled locomotives

400 Series **Freight vehicle specific interface requirements**

- 400 Introduction
- 410 Bogie components
- 420 Brakes & pneumatic equipment
- 430 Body & underframe
- 440 Vehicle performance
 - 441 Braking performance
 - 442 Freight vehicle ride performance
- 450 Non conventional vehicles
 - 451 Articulated or permanently coupled vehicles
 - 452 Rail compatible road trailers
- 460 Vehicle specific requirements
 - 461 Tank wagons

500 Series **Locomotive hauled passenger vehicle specific interface requirements**

- 500 Introduction
- 510 Bogie components
- 520 Brakes & pneumatic equipment
- 530 Body, underframe & appointments
- 540 Vehicle performance
 - 541 Braking performance
 - 542 Vehicle ride performance

600 Series **Multiple unit train specific interface requirements**

- 600 Introduction
- 610 Bogie components
- 620 Brakes & pneumatic equipment
- 630 Body, underframe & appointments
- 640 Vehicle performance
 - 641 Braking equipment
 - 642 Vehicle ride performance
- 650 Safety equipment
- 660 Electric train specific requirements
- 670 Diesel train specific requirements

700 Series Track maintenance vehicle specific interface requirements

- 700 Introduction
- 710 On track vehicles
 - 711 Bogie/suspension components
 - 712 Brakes and pneumatic equipment
 - 713 Body and underframe
 - 714 Safety equipment
 - 715 Vehicle performance
 - 716 Track vehicles operating as a train
- 720 Road/rail vehicles
 - 721 Suspension
 - 722 Brakes
 - 723 Body
 - 724 Safety equipment
 - 725 Vehicle performance
 - 726 Ride performance test
 - 727 Vehicle operation
- 730 Trolleys, trailers, quadricycles and trikes
 - 731 Flat top trolleys
 - 732 Trailers
 - 733 Quadricycles and trikes

800 Series Train operation interface requirements

- 800 Introduction

Appendices

- Appendix A Technical information required for the approval of new vehicles
 - A1 Vehicle information pack for locomotives
 - A2 Vehicle information pack for freight vehicles
 - A3 Vehicle information pack for locomotive hauled passenger vehicles
 - A4 Vehicle information pack for multiple unit trains
 - A5 Vehicle information pack for 'on' track maintenance machines
 - A6 Vehicle information pack for road/rail vehicles
 - A7 Vehicle information pack for trolleys, trailers, quadricycles and trikes
- Appendix B Glossary
- Appendix C Static vehicle weigh test
- Appendix D Standard for driver safety systems
- Appendix E Specification for 1500V dc traction supply
- Appendix F Signalling and communication system
- Appendix G Drawings
- Appendix H Automatic equipment identification (AEI)
- Appendix I Reflective delineators (reflectors)

Status sheet 1 - Rolling Stock Operation Standards Version 1.0 December 2005

This table shows the current status of the Rolling Stock Operation Standard manual and gives instructions for bringing the manual up-to-date.

When a new status sheet is forwarded, it is the registered owner's responsibility to add, remove or replace any pages or units from this manual as instructed in the bold print on the new status sheet.

WOS	date issued	Total pages	WOS	date issued	Total pages
01.010	Dec 2005	4	01.280	Dec 2005	1
			01.281	Dec 2005	1
01.100	Dec 2005	1	01.282	Dec 2005	2
01.110	Dec 2005	25	01.283	Dec 2005	3
01.120	Dec 2005	2	01.284	Dec 2005	1
01.130	Dec 2005	1	01.285	Dec 2005	1
01.140	Dec 2005	1	01.286	Dec 2005	2
01.150	Dec 2005	5	01.287	Dec 2005	1
01.160	Dec 2005	5	01.288	Dec 2005	3
01.170	Dec 2005	1	01.289	Dec 2005	2
01.180	Dec 2005	1	01.290	Dec 2005	3
01.190	Not issued		01.291	Not issued	
			01.292	Dec 2005	1
01.200	Dec 2005	1	01.293	Dec 2005	1
01.210	Dec 2005	1	01.294	Dec 2005	1
01.211	Dec 2005	6	01.295	Dec 2005	1
01.212	Dec 2005	33	01.296	Dec 2005	1
01.220	Dec 2005	1			
01.221	Dec 2005	1	01.300	Dec 2005	1
01.222	Dec 2005	1	01.310	Dec 2005	1
01.230	Dec 2005	2	01.320	Dec 2005	2
01.240	Dec 2005	3	01.321	Dec 2005	1
01.250	Dec 2005	3	01.330	Dec 2005	2
01.260	Dec 2005	1	01.340	Dec 2005	1
01.261	Dec 2005	1	01.341	Dec 2005	1
01.262	Dec 2005	1	01.342	Dec 2005	1
01.263	Dec 2005	1	01.343	Dec 2005	1
01.270	Dec 2005	1	01.350	Dec 2005	3
01.271	Dec 2005	2	01.360	Dec 2005	1
01.272	Dec 2005	2	01.361	Dec 2005	1
01.273	Dec 2005	1	01.362	Dec 2005	1

Status sheet 1 - Rolling Stock Operation Standards Version 1.0 December 2005

WOS	date issued	Total pages	WOS	date issued	Total pages
01.363	Dec 2005	2	01.700	Dec 2005	2
01.364	Dec 2005	1	01.710	Dec 2005	1
01.365	Dec 2005	1	01.711	Dec 2005	1
	Dec 2005		01.712	Dec 2005	3
01.400	Dec 2005	1	01.713	Dec 2005	1
01.410	Dec 2005	2	01.714	Dec 2005	2
01.420	Dec 2005	2	01.715	Dec 2005	2
01.430	Dec 2005	2	01.716	Dec 2005	1
01.440	Dec 2005	1	01.720	Dec 2005	1
01.441	Dec 2005	2	01.721	Dec 2005	1
01.442	Dec 2005	1	01.722	Dec 2005	1
01.450	Dec 2005	1	01.723	Dec 2005	2
01.451	Dec 2005	1	01.724	Dec 2005	1
01.452	Dec 2005	1	01.725	Dec 2005	1
01.460	Dec 2005	1	01.726	Dec 2005	1
01.461	Dec 2005	1	01.727	Dec 2005	1
			01.730	Dec 2005	1
01.500	Dec 2005	1	01.731	Dec 2005	1
01.510	Dec 2005	2	01.732	Dec 2005	1
01.520	Dec 2005	2	01.733	Dec 2005	1
01.530	Dec 2005	2			
01.540	Dec 2005	1	01.800	Dec 2005	1
01.541	Dec 2005	2			
01.542	Dec 2005	1			
01.600	Dec 2005	1			
01.610	Dec 2005	2			
01.620	Dec 2005	1			
01.630	Dec 2005	2			
01.640	Dec 2005	1			
01.641	Dec 2005	1			
01.642	Dec 2005	1			
01.650	Dec 2005	2			
01.660	Dec 2005	1			
01.670	Dec 2005	1			

Status sheet 1 - Rolling Stock Operation Standards Version 1.0 December

WOS Appendix	date issued	Total pages	WOS Appendix	date issued	Total pages
01.A1	Dec 2005	13	01.B	Dec 2005	2
01.A2	Dec 2005	12	01.C	Dec 2005	5
01.A3	Dec 2005	14	01.D	Dec 2005	15
01.A4	Dec 2005	12	01.E	Dec 2005	7
01.A5	Dec 2005	11	01.F	Dec 2005	6
01.A6	Dec 2005	9	01.G	Dec 2005	17
01.A7	Dec 2005	10	01.H	Dec 2005	10
			01.I	Dec 2005	2
