



RAILWAYS OF AUSTRALIA

**MANUAL OF ENGINEERING  
STANDARDS AND PRACTICES**

---

INCORPORATING ENGINEERING AND OPERATIONAL STANDARDS  
AND PRACTICES APPLICABLE TO THE DESIGN, CONSTRUCTIONS  
AND OPERATION OF THE RAILWAY ROLLING STOCK FOR INTERSYSTEM USE

ISSUED UNDER THE AUTHORITY OF THE  
RAILWAYS OF AUSTRALIA COMMITTEE

FIRST ISSUED SEPTEMBER 1992

**RAILWAYS OF AUSTRALIA**

**MANUAL OF ENGINEERING**

**STANDARDS AND PRACTICES**

**VOLUME TWO**

**COMPRISING SECTIONS 13 TO 24**

## INTRODUCTION

This Manual is compiled and issued under the authority of the Railways of Australia Committee.

It prescribes the minimum engineering standards applicable to the design, construction, operation and maintenance of railway rolling stock and associated equipment, and operating practices and procedures related to the safety and service condition of vehicles in inter-system working. It is desirable that these standards also be applied to vehicles engaged in intra-state operations.

Compliance with the requirements of this Manual is mandatory for all vehicles engaged in inter-system working, unless noted otherwise, and ensures the acceptability and compatibility of vehicles engaged in operation within and between Rail Systems. Individual Systems may impose additional or more stringent requirements for internal use, or depart from these standards where interchange of vehicles is not involved and/or where operational safety and performance is not adversely affected.

Users shall note that the information contained in this Manual is considered to be accurate and up-to-date at the time of compilation. However, each user should review the information contained herein in the specific context of the intended application. Railways of Australia and its member Systems accept no responsibility for the accuracy of the information and will not be responsible for any loss or damage of any nature, however incurred, resulting from the use of or reliance upon such information.

# RO MANUAL OF ENGINEERING STANDARDS AND PRACTICES

## 1. STRUCTURE

This manual comprises two volumes, with Volume 1 containing Sections 1 to 12 and Volume 2 containing Section 13 onwards. The subject and content of each Section is summarised in the list of Manual Contents included at the beginning of each Volume.

## 2. AMENDMENTS

A summary of the most recent approved amendments for each Section is included in the Schedule of Amendments located at the front of Volume 1.

---

A complete listing of **ALL** approved amendments for each individual Section is included in the Section Schedule of Amendments located at the beginning of that Section.

Section amendments list the page(s) amended and a brief summary of the amendment made. The latest amendment number for a Section and the date of its adoption or approval is shown as a footer at the lower right hand corner of all amended pages. Copies of all amendments will be supplied to all registered holders of this Manual.

ROA MANUAL OF ENGINEERING STANDARDS  
AND PRACTICES

SCHEDULE OF AMENDMENTS

SECTIONS 13 TO 25

SECTION	AMENDMENT NUMBER	PAGES AMENDED	DATE ISSUED
13	Adopted		
14	Adopted		
15	Adopted		
16	Adopted		
17	Adopted		
18	Adopted		
19	Adopted		
20	Adopted		
21	Adopted		
22	Adopted		
23	Adopted		
24	Adopted		
25	In preparation		
24 supp	In preparation		

# MANUAL OF ENGINEERING STANDARDS AND PRACTICES

## CONTENTS BY SECTION

**1. CIVIL**

Standards for track construction and geometry which affect the dynamic performance of vehicles.

**2. UNION INSPECTION PROCEDURES**

Procedures for the inspection and pre-service approval of new and substantially modified vehicles with reference to those aspects and components affecting staff safety and operation.

**3. ROAD WORTHINESS ACCEPTANCE STANDARDS**

Minimum standards and procedures for the theoretical and practical determination of the dynamic performance of freight vehicles acceptable for general intersystem operations.

**4. INTERCHANGE AGREEMENT**

Specifies the principles of compliance with the ROA Interchange Agreement in relation to vehicle operation, inspection and repairs.

**5. STANDARD TRAIN EXAMINATION PROCEDURES**

The minimum standards and related procedures for the pre-departure and en-route examination of freight trains necessary to ensure safe transit.

**6. BOGIES**

Specifications for the design and construction of freight bogies, including wheels, axles, bearings, and brake systems.

**7. BRAKE EQUIPMENT**

Standard equipment and minimum performance requirements for automatic air-brake systems on rail vehicles in inter-system use.

**8. UNDERFRAMES AND BODIES**

The minimum design requirements for freight vehicle underframes, bodies and other load carrying structural members.

**9. COUPLERS AND DRAFT GEAR**

Standards for couplers, draft gear and associated components to ensure compatibility and acceptable performance.

**10. ATTACHMENTS**

Design, construction and application of various operating and safety related components on freight vehicles.

**11. INTERMODAL EQUIPMENT**

Vehicle and equipment requirements for the carriage of containers and road trailers in inter-modal service.

**12. PASSENGER CARS**

Minimum standards for the construction and provision of passenger facilities in passenger cars for intersystem operations.

**13. LOCOMOTIVES**

Standards for locomotives in intersystem operations ensuring compatibility and acceptable performance.

**14. FREIGHT CONTAINERS**

Minimum standards for the construction and dimensions of general and special purpose freight containers intended for transport on rail.

**15. TANK CARS**

Design, construction and maintenance standards for rail tank cars.

**16. NON-CONVENTIONAL VEHICLES**

Requirements for those vehicles whose design or operation precludes full compliance with other sections of the Manual.

**17. GAUGES AND TEST DEVICES**

Gauges required for the testing and determination of condemning and restoration limits for vehicle components.

**18. ROLLING STOCK OUTLINES**

The maximum permissible vehicle outlines applicable to defined routes.

**19. L.P. GAS INSTALLATIONS**

Requirements for the installation and maintenance of L.P. Gas installations in railway rolling stock.

**20. LOADING AND SECURING OF LOADS**

Specification for those features associated with the loading and securing of general freight not included elsewhere; to be used in the design of freight vehicles and attachments. Does not include instructions for loading staff.

**21. SPECIALLY EQUIPPED VEHICLES**

The minimum requirements for those features of freight vehicles which are intended for the exclusive transport of specific commodities.

**22. LETTERING AND MARKING OF FREIGHT VEHICLES**

Requirements for the standardised lettering and marking of freight vehicles in intersystem operations.

**23. CLASSIFICATION OF FREIGHT VEHICLES AND BOGIES**

Standard classification and numbering of freight vehicles and bogies in both intersystem and intrasystem operations.

**24. FREIGHT VEHICLE FIELD INSPECTION LIMITS**

Dimensional limits, maximum wear and permissible condition/performance parameters to be applied during the inspection of vehicles, bogies, components and equipment in traffic or at light/medium repair facilities.

**25. FREIGHT VEHICLE MAINTENANCE STANDARDS**

*IN COURSE OF PREPARATION*

Maintenance standards and procedures for vehicles and components.