

Australian Standard[®]

**Earth-moving machinery — Off-the-road
wheels, rims and tyres — Maintenance
and repair**

**Part 1: Wheel assemblies and rim
assemblies**

STANDARDS
Australia



This Australian Standard® was prepared by Committee ME-063, Earthmoving Equipment. It was approved on behalf of the Council of Standards Australia on 26 October 2007. This Standard was published on 23 November 2007.

The following are represented on Committee ME-063:

- AUSTRROADS
 - Australian Industry Group
 - Construction and Mining Equipment Industry Group
 - Department of Defence
 - Department of Natural Resources and Mines, Qld
 - Department of Primary Industries and Fisheries, Qld
 - Department of Primary Industries, Mine Safety, NSW
 - Safety Institute of Australia
 - WorkCover New South Wales
-

This Standard was issued in draft form for comment as D1106:2007.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

Keeping Standards up-to-date

Australian Standards® are living documents that reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued.

Standards may also be withdrawn. It is important that readers assure themselves they are using the current Standard, which should include any amendments that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting www.standards.org.au

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

Australian Standard[®]

**Earth-moving machinery — Off-the-road
wheels, rims and tyres — Maintenance
and repair**

**Part 1: Wheel assemblies and rim
assemblies**

Originally as AS 4457—1997.
Revised and redesignated as AS 4457.1—2007.

COPYRIGHT

© Standards Australia

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 8474 7

PREFACE

This Standard was prepared by the Standards Australia Committee ME-063, Earthmoving Equipment, at the request of users of earthmoving equipment, particularly those involved in major mining operations, and is supported by the inspectorates of Queensland, New South Wales and Western Australia. These bodies have expressed their concern that wheels, rims and tyres for earthmoving equipment are being subjected to ever-increasing loads and forces. The origin of the forces is the larger, heavier trucks and payloads being introduced and the higher speeds these vehicles can achieve.

Where a wheel or a rim assembly has disintegrated, pieces of the rim or wheel assembly have been thrown for considerable distances. Fatalities and serious injuries have also occurred when correct procedures have not been followed. The release of large quantities of energy in an uncontrolled manner poses a risk to persons nearby and in order that this element of risk be minimized, some controls over the repair, maintenance and inspection of wheels and rim assemblies are considered necessary.

This Standard supersedes AS 4457—1997, *Earth-moving machinery—Off highway rims and wheels—Maintenance and repair*, and includes revised information relating to tire inflation pressure and takes into account individual or group site requirements.

The AS 4457 series of Standards comprises two parts as follows:

Part 1: Wheel assemblies and rim assemblies (this Standard)

Part 2: Tyres

The term 'normative' has been used in this Standard to define the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	4
1.2 OBJECTIVE	4
1.3 REFERENCED DOCUMENTS	4
1.4 DEFINITIONS	4
SECTION 2 GENERAL REQUIREMENTS	
2.1 DESIGN AND CONSTRUCTION OF REPAIRABLE PARTS	2
2.2 WELDING	12
2.3 IDENTIFICATION	12
SECTION 3 REMOVAL AND INSTALLATION	
3.1 GENERAL	13
3.2 REMOVAL AND DEMOUNT PROCEDURE	13
3.3 INSPECTION AND REPAIR	14
3.4 MOUNT AND FIT PROCEDURE	14
SECTION 4 EXAMINATION OF RIM AND WHEEL ASSEMBLIES	
4.1 GENERAL	15
4.2 IN-SERVICE VISUAL INSPECTION	15
4.3 PERIODIC TESTING	15
4.4 PREPARATION PRIOR TO TEST	15
4.5 INSPECTION REQUIREMENTS	15
SECTION 5 REPAIR	
5.1 GENERAL	17
5.2 ALLOWABLE REPAIRS	17
5.3 WELDING QUALIFICATIONS	17
5.4 STRESS RELIEVING	17
5.5 SURFACE TREATMENT	17
5.6 INSPECTION AND TESTING OF REPAIRS	18
5.7 MARKING AND REPORT	18
APPENDICES	
A ADDITIONAL REQUIREMENTS FOR MOUNTING AND DEMOUNTING	19
B CLASSIFICATION OF DEFECT	23

STANDARDS AUSTRALIA

Australian Standard

**Earth-moving machinery—Off-the-road wheels, rims and tyres—
Maintenance and repair**

Part 1: Wheel assemblies and rim assemblies

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out the requirements for the identification, safe demounting, inspection, maintenance, testing and mounting of off-the-road wheel and rim assemblies for rubber-tyred earth-moving machinery. It applies to the fitment of wheel assemblies and rim assemblies of not less than 600 mm (24 inches) nominal diameter.

1.2 OBJECTIVE

The objective of this Standard is to assist manufacturers, suppliers, employers, repairers and users of earth-moving machinery in minimizing the risk to health and safety of employees working with or otherwise near wheels and rims of earth-moving machinery.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1171	Non-destructive testing—Magnetic particle testing of ferromagnetic products, components and structures
1627	Metal finishing—Preparation and pretreatment of surfaces
1627.4	Part 4: Abrasive blast cleaning of steel
2207	Non-destructive testing—Ultrasonic testing of fusion welded joints in carbon and low alloy steel
AS/NZS	
1554	Structural steel welding
1554.5	Part 5: Welding of steel structures subject to high levels of fatigue loading
4360	Risk management

1.4 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

NOTE: It is suggested that the readers of this Standard also refer to Figures 1.3 to 1.5 for clarification.

1.4.1 Cold inflation pressure

The tyre inflation pressure set in accordance with both the tyre and rim manufacturer's recommendations.