



**Earth-moving machinery – Access systems (ISO 2867:2011, MOD)**

**STANDARDS**  
Australia

Currently in preview, click buy full version

This Australian Standard® was prepared by Committee ME-063, Earthmoving Equipment. It was approved on behalf of the Council of Standards Australia on 5 July 2019. This Standard was published on 29 July 2019.

---

The following are represented on Committee ME-063:

- Australian Industry Group
  - Construction and Mining Equipment Industry Group
  - Department of Natural Resources, Mines and Energy (Qld)
  - Institute of Instrumentation, Control and Automation Australia
  - Minerals Council of Australia
  - Mining Electrical and Mining Mechanical Engineering Society
  - NSW Department of Planning and Environment
  - SafeWork NSW
  - University of Queensland
- 

This Standard was issued in draft form for comment as DR AS 3327:2018.

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Standards may also be withdrawn.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 a 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](http://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](mailto:mail@standards.org.au), or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

---

Australian Standard®

**Earth-moving machinery—Access  
systems (ISO 2867:2011, MOD)**

First published as AS 3868—1991.  
Revised and redesignated as AS 5327:2019.

**COPYRIGHT**

© Standards Australia Limited

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, unless otherwise permitted under the Copyright Act 1968.

ISBN 978 1 76072 488 7

## PREFACE

This Standard was prepared by the Standards Australia Committee ME-063, Earthmoving Equipment, to supersede AS 3868—1991, *Earth-moving machinery—Design guide for access systems*.

The objective of this Standard is to specify criteria for systems that provide access to the operator station and to routine maintenance points on earth-moving machinery as defined in ISO 6165. It is applicable to the access systems (e.g. enclosure openings, platforms, guardrails, handrails and handholds, stairways and steps, ladders) on such machines parked in accordance with the manufacturer's instructions. Its criteria are based on the 5th to 95th percentile operator dimensions as defined in ISO 3411. It deals with the following significant hazards, hazardous situations and events: slip, trip and fall of persons, unhealthy postures and excessive effort.

This Standard is an adoption with national modifications, and has been reproduced from, ISO 2867:2011, *Earth-moving machinery — Access systems*. The modifications set out in Appendix ZZ are additional requirements, which have been added at the end of the source text.

Appendix ZZ lists the variations to ISO 2867:2011 for the application of this Standard in Australia.

The major changes in this edition are as follows:

- (a) Additions to general requirements for access systems (see Clause 4.1).
- (b) Guidance on 400 mm first step height and the design philosophy hierarchy where this is not practicable (see Clause 4.1 and Table 6).
- (c) Clarity on the hierarchy for choice of types of access systems (see Clause 4.1).
- (d) Additional clarity for alternative exit paths (see Clause 4.3).
- (e) Recommending against the use of chains and cables, and guidance on hinged gates and foot barriers (see Clause 6.2).
- (f) Amendments to guidance on provision of guardrails at certain heights from the ground (see Clause 6.2).
- (g) Guidance on design of steps, step nosing and transitions between ladders to platforms (see Clause 8.2).

As this document has been reproduced from an International Standard, the following applies:

- (i) In the source text “the International Standard” should read “this Australian Standard”.
- (ii) A full point substitute for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

## CONTENTS

	Page
Foreword .....	v
Introduction .....	vi
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	1
4 Requirements for access systems .....	5
5 Requirements for enclosure openings .....	8
6 Requirements for guardrails, foot barriers, platforms, passageways, walkways and other surfaces used for walking, crawling, climbing, stepping or standing .....	10
7 Requirements and recommendations for handrails and handholds .....	13
8 Requirements for stairways and steps .....	15
9 Requirements for ladders .....	17
Annex A (informative) Examples of surfaces considered to be slip resistant .....	20
Annex B (normative) Additional requirements for powered mobile access system that transports a person .....	21
Bibliography .....	22

## NATIONAL FOREWORD

This Standard is the primary source of guidance for designers, manufacturers, importers, suppliers, end-users and maintainers in relation to the design of earthmoving machinery access systems in Australia. This Standard was prepared to address the preceding issue of multiple, conflicting guidance relating to the design of access systems for earth-moving machinery.

A modified text adoption, rather than a direct text adoption of ISO 2867:2011, has been chosen to provide further clarity and guidance on specific aspects of earthmoving machinery access systems. This is to account for Australian incident history, current practice, as well as Australia's relatively high level of earthmoving machinery health and safety expectations. It is the intention of the Standards Australia Committee ME-063 that as ISO 2867 comes up for further revision, the ME-063 committee would prefer to influence its direction, rather than continuing with a modified text adoption, i.e. it is envisaged that this modified adoption will be withdrawn subject to the next revision of ISO 2867.

In addition, this Standard is intended to be the primary reference in relation to the design of access systems on earthmoving machinery. Formerly AS 3868—1991, AS 1657 and ISO 14122 were used for access systems on earthmoving machinery.

## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 2867 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 2, *Safety, ergonomics and general requirements*.

This seventh edition cancels and replaces the sixth edition (ISO 2867:2006), which has been technically revised.

## INTRODUCTION

The structure of safety standards in the field of machinery is as follows.

- a) Type-A standards (basic standards) give basic concepts, principles for design and general aspects that can be applied to machinery.
- b) Type-B standards (generic safety standards) deal with one safety aspect or one type of safeguard that can be used across a wide range of machinery:
  - type-B1 standards on particular safety aspects (e.g. safety distances, surface temperature, noise);
  - type-B2 standards on safeguards (e.g. two-hand controls, interlocking devices, pressure-sensitive devices, guards).
- c) Type-C standards (machinery safety standards) dealing with detailed safety requirements for a particular machine or group of machines.

This document is a type-C standard as stated in ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

**NOTE** ISO 14122 is a series of type-B standards that provides general requirements for access to stationary and mobile machines and that can be used as a general reference for the design of access systems for earth-moving machines.

## AUSTRALIAN STANDARD

**Earth-moving machinery—Access systems (ISO 2867:2011, MOD)****1 Scope**

This International Standard specifies criteria for systems that provide access to the operator station and to routine maintenance points on earth-moving machinery as defined in ISO 6165. It is applicable to the access systems (e.g. enclosure openings, platforms, guardrails, handrails and handholds, stairways and steps, ladders) on such machines parked in accordance with the manufacturer's instructions. Its criteria are based on the 5th to 95th percentile operator dimensions as defined in ISO 3411. It deals with the following significant hazards, hazardous situations and events: slip, trip and fall of persons, unhealthy postures and excessive effort.

The general principles set out in this International Standard can be used for the selection of fixed and/or portable access systems for repairs, assembly, disassembly and longer interval maintenance.

**2 Normative references**

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3411, *Earth-moving machinery — Physical dimensions of operators and minimum operator space envelope*

ISO 6165, *Earth-moving machinery — Basic types — Identification and terms and definitions*

ISO 12508, *Earth-moving machinery — Operator station and maintenance areas — Bluntness of edges*

ISO 14122-1:2001, *Safety of machinery — Permanent means of access to machinery — Part 1: Choice of fixed means of access between levels*

ISO 14122-4, *Safety of machinery — Permanent means of access to machinery — Part 4: Fixed ladders*

ISO 14567, *Personal protective equipment for protection against falls from a height — Single-point anchor devices*

**3 Terms and definitions**

For the purposes of this document, the following terms and definitions apply.

**3.1 General terms and definitions****3.1.1****target dimension**

dimensional value that takes into account ergonomics criteria based on comfort

NOTE Acceptable values are within the specified range (from minimum to maximum).