AS/NZS 4024.1801:2014
ISO 13857:2008

AS/NZS 4024.1801:2014

Australian/New Zealand Standard™

Safety of machinery

Part 1801: Safety distances to prevent danger zones being reached by upper and lower limbs

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee SF-041, General Principles for the Guarding of Machinery. It was approved on behalf of the Council of Standards Australia on 5 June 2014 and on behalf of the Council of Standards New Zealand on 24 April 2014.
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The following are represented on Committee SF-041:

Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Manufacturing Workers Union
Department of Mines and Petroleum, WA
Department of the Premier and Cabinet, SA
Engineers Australia
Federal Chamber of Automotive Industries
Human Factors and Ergonomics Society of Australia
Institute of Instrumentation, Control and Automation
National Safety Council of Australia
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Standards are living documents which 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 Standards may also be withdrawn.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 which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Australia Web Site at www.standards.org.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR AS/NZS 4024.1801.

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Safety of machinery

Part 1801: Safety distances to prevent danger zones being reached by upper and lower limbs

Originated in Australia as part of AS 4024.1(Int)—1992.
Revised in part and redesignated as AS 4024.1801—2006 and AS 4024.1802—2006.
AS 4024.1801—2006 and AS 4024.1802—2006 jointly revised, amalgamated and redesignated as AS/NZS 4024.1801:2014.

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee SF-041, General Principles for the Guarding of Machinery, to supersede AS 4024.1801—2006, *Safety of machinery*, Part 1801: *Safety distances to prevent danger zones being reached by the upper limbs*, and AS 4024.1802—2006, *Safety of machinery*, Part 1802*: Safety distances and safety gaps—Safety distances to prevent danger zones being reached by the lower limbs*.

It is emphasized that this Standard is part of the AS(/NZS) 4024.1 series and it is imperative that it is used in conjunction with other applicable parts of the series. A complete listing of all current parts of the AS(/NZS) 4024.1 series can be found at the Standards Australia website <www.standards.org.au> and in AS/NZS 4024.1100, *Safety of machinery*, Part 1100: *Application Guide*.

The objective of this Standard is to establish values for safety distances in both industrial and non-industrial environments to prevent machinery hazard zones being reached. The safety distances are appropriate for protective structures. It also gives information about distances to impede free access by the lower limbs. The distances apply when adequate safety can be achieved by distance alone. This Standard does not necessarily apply for hazards such as radiation or emission of substances.

This Standard is identical with, and has been reproduced from ISO 13857:2008, *Safety of machinery—Safety distances to prevent hazard zones being reached by upper and lower limbs.*

As this Standard is reproduced from an International Standard, the following applies:

(a) In the source text ‘this International Standard’ should read this ‘Australian/New Zealand Standard’.

(b) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian/New Zealand Standard*	
ISO		AS/NZS	
12100	Safety of machinery—Basic concepts, general principles for design	4024	Safety of machinery
12100-1	Part 1: Basic terminology, methodology	4024.1201	Part 1201: General principles for design—Risk assessment and risk reduction

The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An ‘informative’ annex is only for information and guidance.

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INTRODUCTION

This document is a type B standard as stated in ISO 12100-1.

The provisions of this document can be supplemented or modified by a type C standard.

For machines which are covered by the scope of a type C standard and which have been designed and built according to the provisions of that standard, the provisions of that type C standard take precedence over the provisions of this type B standard.

One method of eliminating or reducing risks caused by machinery is to make use of safety distances preventing hazard zones from being reached by the upper and lower limbs.

In specifying safety distances, a number of aspects have to be taken into consideration, such as

— reach situations occurring when machinery is being used,

— reliable surveys of anthropometric data, taking into account population groups likely to be found in the countries concerned,

— biomechanical factors, such as compression and stretching of parts of the body and limits of joint rotation,

— technical and practical aspects, and

— additional measures for particular groups of persons (e.g. persons with special needs), which could be required due to a deviation from the specified body dimensions.

AUSTRALIAN/NEW ZEALAND STANDARD

Safety of machinery

Part 1801:
Safety distances to prevent danger zones being reached by upper and lower limbs

1 Scope

This International Standard establishes values for safety distances in both industrial and non-industrial environments to prevent machinery hazard zones being reached. The safety distances are appropriate for protective structures. It also gives information about distances to impede free access by the lower limbs (see 4.3).

This International Standard covers people of 14 years and older (the 5th percentile stature of 14 year olds is approximately 1 400 mm). In addition, for upper limbs only, it provides information for children older than 3 years (5th percentile stature of 3 year olds is approximately 900 mm) where reaching through openings needs to be addressed.

NOTE 1 Data for preventing lower limb access for children is not considered.

The distances apply when adequate safety can be achieved by distance alone. Because safety distances depend on size, there will be some people of extreme dimensions who will be able to reach hazard zones even when the requirements of this International Standard are complied with.

NOTE 2 These safety distances will not provide sufficient protection against certain hazards, for example, radiation and emission of substances. For such hazards, additional or other measures need to be taken.

The clauses of the International Standard covering lower limbs apply when access by the upper limbs is not foreseeable according to the risk assessment.

The safety distances are intended to protect those persons trying to reach hazard zones under the conditions specified (see 4.1.1).

NOTE 3 This International Standard is not intended to provide measures against reaching a hazard zone by climbing over.

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 12100-1, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology*