AS 4024.3301—2009

Australian Standard®

Safety of machinery

Part 3301: Robots for industrial environments—Safety requirements

This Australian Standard® was prepared by Committee SF-041, General Principles for the Guarding of Machinery. It was approved on behalf of the Council of Standards Australia on 26 March 2009.
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The following are represented on Committee SF-041:

- Australian Chamber of Commerce and Industry
- Department of the Premier and Cabinet, SA
- Department of Employment and Industrial Relations, Qld
- Department of Primary Industries, Mineral Resources, NSW
- Engineers Australia
- Federal Chamber of Automotive Industries
- Human Factors and Ergonomics Society of Australia
- Institution of Instrumentation, Control and Automation Australia
- National Electrical and Communications Association
- Safety Institute of Australia
- Tractor and Machinery Association of Australia
- University of Melbourne
- Winery Engineering Association
- WorkCover NSW
- WorkSafe Victoria

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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.

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Part 3301: Robots for industrial environments—Safety requirements

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PREFACE

This Standard was prepared by the Standards Australia Committee SF-041, General Principles for the Guarding of Machinery to supersede AS 2939—1987, *Industrial robot systems—Safe design and usage.*

During its work, the Committee agreed to use the International Standard ISO 10218-1, *Robots for industrial environments—Safety requirements,* Part 1: *Robot* as the basis for this Australian Standard. This action will ensure the continuing consistency of machinery safety standards with each other as well as maintaining a consistent approach to machinery safety standards in Australia.

Hazards associated with robots are well recognized but the sources of these hazards are frequently unique to a particular robot system. The number and types of hazards are directly related to the nature of the automation process and the complexity of the installation. Risks associated with these hazards vary with the type of robot used, its purpose and the way in which it is installed, programmed, operated and maintained.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

CONTENTS

STANDARDS AUSTRALIA

Australian Standard
Safety of machinery

Part 3301: Robots for industrial environments—Safety requirements

1 SCOPE

This Standard specifies requirements and guidelines for the inherent safe design, protective measures and use of industrial robots and robot systems as defined in Clause 4. It describes basic hazards associated with robots, and provides requirements to eliminate or adequately reduce the risks associated with these hazards.

This Standard does not apply to non-industrial robots although the safety principles established in this Standard may be utilized for them. Examples of non-industrial robot applications include, but are not limited to undersea, military and space robots; tele-operated manipulators; prosthetics and other aids for the physically impaired; micro-robots (displacement <1 mm); surgery or healthcare; and service or consumer products.

2 OBJECTIVE

The objective of this Standard is to provide designers, manufacturers, suppliers and employers with the technical means to minimize the risks to the health and safety of those working with or otherwise near industrial robots.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard.

AS		
4024	Safety of machinery	
4024.1201	Part 1201:	General principles—Basic terminology and methodology
4024.1202	Part 1202:	General principles—Technical principles
4024.1301	Part 1301:	Risk assessment—Principles of risk assessment
4024.1501	Part 1501:	Design of safety related parts of control systems—General principles for design
4024.1604	Part 1604:	Design of controls, interlocks and guarding—Emergency stop—Principles for design
4024.1905	Part 1905:	Displays, controls, actuators and signals—Indication, marking and actuation—Requirements for marking
4024.2801	Part 2801:	Safety distances and safety gaps—Positioning of protective equipment with respect to the approach speed of parts of the human body
60204	Safety of machinery—Electrical equipment of machines	
60204.1	Part 1:	General requirements (IEC 60204-1, Ed. 5 (FDIS) MOD)
AS/NZS		
61000	Electromagnetic compatibility (EMC)	
61000.6.2	Part 6.2:	General standards—Immunity for industrial environments
61000.6.4	Part 6.4:	Generic standards—Emission standard for industrial environments

