AS 4024.1401—2006

Australian Standard™

Safety of machinery

Part 1401: Ergonomic principles—Design principles—Terminology and general principles

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 21 April 2006.
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The following are represented on Committee SF-041:

Australian Chamber of Commerce and Industry
Australian Electrical and Electronic Manufacturers Association
Department for Administration and Information Services, SA
Department of Consumer and Employment Protection, WorkSafe Division, WA
Department of Primary Industries, Mine Safety, 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
National Safety Council of Australia
Office of the Australian Safety and Compensation Council
Safety Institute of Australia
The University of Melbourne
Tractor and Machinery Association of Australia
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PREFACE

This Standard was prepared by the Standards Australia Committee SF-041 General Principles for the Guarding of Machinery, as a revision (in part) of AS 4024.1—1996, *Safeguarding of machinery*, Part 1: *General principles*.

During its work, the Committee considered a number of Standards originating within the European Community in the field of safety of machinery. Many of these European Standards are being adopted virtually unchanged as International Standards by the International Organization for Standardization (ISO) and the Committee has agreed to continue to use material emanating from both CEN and ISO in this new edition. This action will maintain consistency with previous editions of AS 4024.1 and other machine-specific Australian Standards.

This edition has been published as a series of Parts rather than the single Standard previously published as AS 4024.1. In doing this, the Committee has cleared the way for simple revisions in the future. When a new edition of a relevant Standard becomes available at the international level, it will be adopted and published within the framework of AS 4024 with a minimum delay, so ensuring continued international alignment.

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

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FOREWORD

Ergonomically designed work systems enhance safety, effectiveness and efficiency, improve human working and living conditions, and counteract adverse effects on human health and performance. Good ergonomic design therefore exerts a favourable influence on the work system, and on the reliability of the human being within it.

In this Standard the term ‘ergonomics’ refers to a multidisciplinary field of science and its application. In applying ergonomics to the design of work systems it is important to take human capabilities skills, limitations and needs into account when exploring the interaction between people, technology and work environment.

The work system is derived from a concept that combines the operators, work equipment (including machinery), work space, work environment, work process work task, the management and organization and interactions between them. It can vary in complexity from a workshop with a single operator using hand-held equipment to a process plant and its operators.

Work equipment is only one component of the work system and should not be considered in isolation. Good design starts with the operator and takes into account how the operator is expected to interact with the work equipment and how the work equipment fits into the system as a whole. This is particularly important the more the work equipment is interdependent on other components of the system.

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1 SCOPE

This Standard establishes the ergonomics principles to be followed during the process of design of work equipment and in particular, machinery. Although the principles in this Standard are orientated towards equipment for occupational use, they are applicable also to equipment for private use.

This Standard applies to the interactions between the operator and the work equipment when installing, operating, adjusting, maintaining, cleaning, repairing or transporting equipment and outlines the principles to be followed in taking the health and safety of the operator fully into account.

The ergonomic principles given in this Standard fully apply to all ranges of individual ability. Information on dimensions will need to be interpreted to suit the intended population.

2 OBJECTIVE

The objective of this Standard is to enable designers, manufacturers, suppliers, employers and users of machinery to minimize the risks to the health and safety of employees and others working with or otherwise near machinery by providing principles for egonomic design and general ergonomic principles for their use.

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
4024.1702 Part 1702: Human body measurements—Principles for determining the dimensions required for whole body access into machinery
4024.1703 Part 1703: Human body measurements—Principles for determining the dimensions required for access openings
4024.1901 Part 1901: Displays, controls, actuators and signals—Ergonomic requirements for the design of display and control actuators—General principles for human interactions with display and control actuators
4024.1902 Part 1902: Displays, controls, actuators and signals—Ergonomic requirements for the design of displays and control actuators—Displays
4024.1903 Part 1903: Displays, controls, actuators and signals—Ergonomic requirements for the design of displays and control actuators—Control actuators

4 DEFINITIONS

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