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Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010, MOD)

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Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Institute for Non-Destructive Testing
Better Regulation Division (Fair Trading, Safework NSW, Testsafe)
Bureau of Steel Manufacturers of Australia
Crane Industry Council of Australia
Department of Regional NSW
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Engineers Australia
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Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010, MOD)

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Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee ME-005, Cranes., to supersede AS 2788:2002, *Dynamic fluid power — General requirements for systems (ISO 4414:1998, MOD)*.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to specify general rules and safety requirements for pneumatic fluid power systems and components used on machinery as defined by AS/NZS 4024.1201.

This Standard deals with all significant hazards associated with pneumatic fluid power systems and specifies principles to apply in order to avoid those hazards when the systems are put to their intended use.

This Standard applies to the design, construction and modification of systems and their components, also taking into account the following aspects:

(a) Assembly.

(b) Installation.

(c) Adjustment.

(d) Uninterrupted system operation.

(e) Ease and economy of maintenance and cleaning.

(f) Reliable operation in all intended uses.

(g) Energy efficiency.

(h) Environment.

This Standard does not apply to air compressors and the systems associated with air distribution as typically in a factory, including gas bottles and receivers.

This Standard is an adoption with national modifications and has been reproduced from ISO 4414:2010, *Pneumatic fluid power — General rules and safety requirements for systems and their components*. The modifications are additional requirements and are set out in Appendix ZZ, which has been added at the end of the source text.

Appendix ZZ lists the variations to ISO 4414:2010, for the application of this Standard in Australia.

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

(i) In the source text “this International Standard” should read “this Australian Standard”.

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

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.

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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 4414 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 9, *Installations and systems*.

This third edition cancels and replaces the second edition (ISO 4414:1998), which has been technically revised, specifically with regards to the following:

a) integration of ISO 4414:1998 and EN 983:1996;

b) integration of safety requirements to comply with the European Machinery Directive 2006/42/EC;

c) updating of safety requirements, taking into account International Standards on machine safety.

Introduction

This International Standard is a type B standard as defined in ISO 12100. The stipulations of this International Standard can be supplemented or modified by a type C standard. For machines that are covered by the scope of a type C standard and that have been designed and built in accordance with the provisions of that standard, the provisions of that type C standard take precedence over the provisions of this type B standard.

In pneumatic fluid power systems, power is transmitted and controlled through air or a neutral gas under pressure within a circuit.

The application of pneumatic fluid power systems requires a thorough understanding and precise communication between the supplier and purchaser. This International Standard was prepared to assist that understanding and communication and to document many of the good practices learned from experience with pneumatic systems.

Use of this International Standard assists in

a) identifying and specifying the requirements for pneumatic systems and components;

b) identifying respective areas of responsibility;

c) designing systems and their components to comply with specific requirements;

d) understanding the safety requirements of a pneumatic system.

Equivalent requirements for hydraulic systems are defined in ISO 4413.

Australian Standard®

Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010, MOD)

1 Scope

This International Standard specifies general rules and safety requirements for pneumatic fluid power systems and components used on machinery as defined by ISO 12100:2010, 3.1. It deals with all significant hazards associated with pneumatic fluid power systems and specifies principles to apply in order to avoid those hazards when the systems are put to their intended use.

NOTE 1 See Clause 4 and Annex A.

The significant hazard noise is incompletely dealt with in this International Standard.

NOTE 2 Noise emission depends especially on the installation of pneumatic components or systems into machinery.

This International Standard applies to the design, construction and modification of systems and their components, also taking into account the following aspects:

a) assembly;

b) installation;

c) adjustment;

d) uninterrupted system operation;

e) ease and economy of maintenance and cleaning;

f) reliable operation in all intended uses;

g) energy efficiency; and

h) environment.

This International Standard does not apply to air compressors and the systems associated with air distribution as typically installed in a factory, including gas bottles and receivers.

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 1219-1, *Fluid power systems and components — Graphic symbols and circuit diagrams — Part 1: Graphic symbols for conventional use and data-processing applications*

ISO 1219-2, *Fluid power systems and components — Graphic symbols and circuit diagrams — Part 2: Circuit diagrams*

ISO 5598, *Fluid power systems and components — Vocabulary*

ISO 11727, *Pneumatic fluid power — Identification of ports and control mechanisms of control valves and other components*

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 13850, *Safety of machinery — Emergency stop — Principles for design*