

AS 4024.3003:2021



STANDARDS
Australia



Safety of machinery

Part 3003: Machine tools safety — Presses — Safety requirements for hydraulic presses



currently in preview, click buy full version

AS 4024.3003:2021

This Australian Standard ® was prepared by SF-041, Safety of Machinery. It was approved on behalf of the Council of Standards Australia on 19 August 2021.

This Standard was published on 27 August 2021.

The following are represented on Committee SF-041:

Arboriculture Australia
Austmine
Australian Forest Products Association
Australian Industry Group
Australian Institute of Health & Safety
Australian Manufacturing Technology Institute
Australian Manufacturing Workers Union
Australian Packaging and Processing Machinery Association
Better Regulation Division (Fair Trading, Safework NSW, TestSafe)
Department of Regional NSW
Engineers Australia
Human Factors and Ergonomics Society of Australia
Institute of Instrumentation, Control & Automation Aust
NSCA Foundation
Professionals Australia
SafeWork SA
Swinburne University of Technology
University of Melbourne
Victorian WorkCover Authority (WorkSafe Victoria)
Winery Engineering Association (Australia)
Workplace Health and Safety Queensland

Additional Interests

New Zealand Safety Council
WorkSafe New Zealand

This Standard was issued in draft form for comment as DR AS 4024.3003:2021.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

ISBN 978 1 76113 489 0

Safety of machinery

Part 3003: Machine tools safety — Presses — Safety requirements for hydraulic presses

First published as AS/NZS 4024.3003:2021.

COPYRIGHT

© ISO 2021 — All rights reserved
© Standards Australia Limited 2021

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 (Cth).

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee SF-041, Safety of Machinery.

The objective of this document is to specify the technical safety requirements and measures to be adopted by persons undertaking the design, manufacture and supply of hydraulic presses which are intended to work cold metal or material partly made up of cold metal.

The presses covered by this document range in size from small high-speed machines with a single operator producing small workpieces to large relatively slow-speed machines with several operators and large complex workpieces.

This document deals with all significant hazards relevant for hydraulic presses when they are used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer. All the phases of the lifetime of the machinery as described in AS/NZS 4024.1201:2014, Clause 3.1, have been taken into consideration.

This document is an adoption with national modifications, and has been reproduced from, ISO 16092-3:2017, *Machine tools safety — Presses — Part 3: Safety requirements for hydraulic presses*.

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 16092-3:2017 for the application of this Standard in Australia and New Zealand.

As this document has been reproduced from an International Standard, a full point substitutes 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

Preface	ii
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 List of significant hazards	2
5 Safety requirements and/or measures	2
5.1 General	2
5.2 Basic design considerations	2
5.2.1 Hydraulic and pneumatic systems — Common features	2
5.2.2 Pneumatic systems	2
5.2.3 Hydraulic systems	2
5.2.4 Electric systems	2
5.3 Mechanical hazards in the tools area	3
5.3.1 Major danger zone	3
5.3.2 Safeguarding measures	3
5.3.3 Other safety requirements	3
5.3.4 Release of trapped persons between the tools	3
5.3.5 Release of persons trapped inside enclosure areas	3
5.3.6 Prevention of gravity fall during maintenance or repair	3
5.3.7 Prevention of unintended gravity fall during production (down-stroking press)	3
5.4 Control and monitoring system	4
5.4.1 Control and monitoring functions	4
5.4.2 Muting	4
5.4.3 Selection devices	5
5.4.4 Position sensor	5
5.4.5 Control device	5
5.4.6 Valves	5
5.4.7 Performance level of safety functions	5
5.5 Tool-setting, tool strokes, maintenance and lubrication	25
5.5.1 Movement during tool-setting, maintenance and lubrication	25
5.5.2 Movement by inching device	25
5.6 Mechanical hazards — Other	25
5.7 Slips, trips and falls	25
5.8 Protection against other hazards	25
6 Verification of the safety requirements and/or measures	25
7 Information for use	27
7.1 General	27
7.2 Marking	27
7.3 Warnings	27
7.4 Instruction handbook	27
Annex A (informative) Significant hazards, hazardous situations and protective measures	28
Annex B (normative) Calculation of minimum distances	29
Annex C (normative) The response time of the hydraulic system	30
Annex D (informative) Interlocking devices associated with guards	31
Annex E (informative) The connection of the stopping time measurement equipment	34

Annex F	(informative) Examples for hydraulic speed limitation	35
Bibliography		39
Appendix ZZ	(normative) Variations to ISO 16092-3:2017 for Australia and New Zealand	41

Currently in preview, click buy full version

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 10, *Safety*.

A list of all parts in the ISO 16092 series can be found on the ISO website.

Introduction

This document is a “Type C” standard as stated in ISO 12100.

It is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organizations, market surveillance, etc.).

Others can be affected by the level of machinery safety achieved by the above-mentioned stakeholder groups by means of this document:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises);
- consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate in the drafting process of this document.

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 type-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.

This document is intended to be applied in addition to ISO 16092-1.

Australian Standard®

Safety of machinery

Part 3003: Machine tools safety — Presses — Safety requirements for hydraulic presses

1 Scope

This document, in addition to ISO 16092-1, specifies the technical safety requirements and measures to be adopted by persons undertaking the design, manufacture and supply of hydraulic presses which are intended to work cold metal or material partly made up of cold metal.

The presses covered by this document range in size from small high-speed machines with a single operator producing small workpieces to large relatively slow-speed machines with several operators and large complex workpieces.

This document deals with all significant hazards relevant for hydraulic presses when they are used as intended and under the conditions of misuse which are reasonably foreseeable by the manufacturer (see [Clause 4](#)). All the phases of the lifetime of the machinery as described in ISO 12100:2010, 5.4 have been taken into consideration.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components*

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

ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

ISO 16092-1:2017, *Machine tools safety — Presses — Part 1: General safety requirements*

IEC 60947-5-8, *Low-voltage switchgear and control gear — Part 5-8: Control circuit devices and switching elements — Three-position enabling switches*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010, ISO 13849-1:2015, ISO 16092-1:2017 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

restraint valve

device which protects against a gravity fall of the slide/ram