

This is a preview of "ISO 16092-2:2019". [Click here to purchase the full version from the ANSI store.](#)

First edition
2019-10

Machine tools safety — Presses — Part 2: Safety requirement for mechanical presses

Sécurité des machines-outils - Presses —

Partie 2: Exigences de sécurité pour les presses mécaniques



Reference number
ISO 16092-2:2019(E)

© ISO 2019

This is a preview of "ISO 16092-2:2019". Click here to purchase the full version from the ANSI store.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

This is a preview of "ISO 16092-2:2019". [Click here to purchase the full version from the ANSI store.](#)

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 List of significant hazards	3
5 Safety requirements and/or measures	3
5.1 General.....	3
5.2 Basic design considerations.....	3
5.2.1 Hydraulic and pneumatic systems — Common features.....	3
5.2.2 Pneumatic systems.....	3
5.2.3 Hydraulic systems.....	4
5.2.4 Electric systems.....	4
5.2.5 Mechanical brake.....	4
5.2.6 Slide adjustment.....	5
5.2.7 Slide counterbalance systems.....	5
5.2.8 Operating valves and exhaust systems.....	5
5.2.9 Additional requirements for Group 1 presses.....	6
5.2.10 Additional requirements for Group 2 presses.....	6
5.3 Mechanical hazards in the tools area.....	6
5.3.1 Major danger zone.....	6
5.3.2 Safeguarding measures.....	6
5.3.3 Other safety requirements.....	7
5.3.4 Release of trapped persons in the tools area.....	7
5.3.5 Release of persons trapped inside enclosed areas.....	7
5.3.6 Prevention of gravity fall during maintenance or repair.....	7
5.4 Control and monitoring system.....	8
5.4.1 Control and monitoring functions.....	8
5.4.2 Muting.....	10
5.4.3 Selection devices.....	10
5.4.4 Position sensors.....	10
5.4.5 Control devices.....	11
5.4.6 Valves.....	11
5.4.7 Performance level of safety functions.....	12
5.4.8 Single stroke function/device.....	28
5.4.9 Stopping-performance (overrun) monitoring function/device.....	28
5.4.10 Additional requirements for Group 1 presses.....	28
5.4.11 Additional requirements for Group 2 presses.....	30
5.5 Tool-setting, trial strokes, maintenance and lubrication.....	30
5.5.1 INCH mode.....	30
5.5.2 Additional requirements for Group 1 presses.....	31
5.5.3 Additional requirements for Group 2 presses.....	31
5.6 Mechanical hazards — Other.....	32
5.7 Slips, trips and falls.....	32
5.8 Protection against other hazards.....	32
5.8.1 Hazards related to servo drive system.....	32
6 Verification of the safety requirements and/or measures	32
7 Information for use	37
7.1 General.....	37
7.2 Marking.....	37
7.3 Warnings.....	38
7.4 Instruction handbook.....	38

This is a preview of "ISO 16092-2:2019". [Click here to purchase the full version from the ANSI store.](#)

7.5	Stroke indication means	38
Annex A	(informative) Significant hazards, hazardous situations and protective measures.....	39
Annex B	(normative) Calculation of minimum distances.....	40
Annex C	(informative) The setting of the rotary cam arrangement.....	44
Annex D	(informative) Determination of the stopping time t_2 for Group 1 presses.....	54
Bibliography	59

This is a preview of "ISO 16092-2:2019". [Click here to purchase the full version from the ANSI store.](#)

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 of 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 www.iso.org/iso/foreword.html.

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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.

This document 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 organisations, market surveillance etc.)

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

- 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 at 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.