



**BSI Standards Publication**

## **Machine tools safety — Presses**

---

Part 2: Safety requirement for mechanical presses

## National foreword

This British Standard is the UK implementation of EN ISO 16092-2:2020. It supersedes BS EN 692:2005+A1:2009, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MTE/1/1, Machine tools - Safety.

A list of organizations represented on this committee can be obtained on request to its committee manager.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2020  
Published by BSI Standards Limited 2020

ISBN 978 0 580 95612 6

ICS 25.120.10; 25.080.01

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 September 2020.

### Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

---

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 16092-2**

September 2020

ICS 25.080.01

Supersedes EN 692:2005+A1:2009

English Version

**Machine tools safety - Presses - Part 2: Safety requirement  
for mechanical presses (ISO 16092-2:2019)**

Sécurité des machines-outils - Presses - Partie 2 :  
Exigences de sécurité pour les presses mécaniques  
(ISO 16092-2:2019)

Werkzeugmaschinen - Sicherheit von Pressen - Teil 2:  
Mechanische Pressen (ISO 16092-2:2019)

This European Standard was approved by CEN on 29 July 2020.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

## European foreword

This document (EN ISO 16092-2:2020) has been prepared by Technical Committee ISO/TC 39 "Machine tools" in collaboration with Technical Committee CEN/TC 143 "Machine tools - Safety" the secretariat of which is held by SNV.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2021, and conflicting national standards shall be withdrawn at the latest by March 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 692:2005+A1:2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZA, which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Endorsement notice

The text of ISO 16092-2:2019 has been approved by CEN as EN ISO 16092-2:2020 without any modification.

## Annex ZA (informative)

### Relationship between this European Standard and the essential requirements of EU Directive 2006/42/EC aimed to be covered

This European Standard has been prepared under a Commission's standardization request "M/396 Mandate to CEN and CENELEC for Standardisation in the field of machinery " to provide one voluntary means of conforming to essential requirements of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast).

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

**Table ZA.1 — Correspondence between this European Standard and Annex I of Directive 2006/42/EC**

<b>The relevant Essential Requirements of Directive 2006/42/EC</b>	<b>Clause(s)/sub-clause(s) of this EN</b>	<b>Remarks/Notes</b>
1.1.2 Principles of safety integration	5.1	
1.1.8 Seating		not covered
<b>1.2. Control systems</b>	5.2/5.3/5.4/5.5	
1.3.2 Risk of break-up during operation	5.2.5/5.2.10.1	
1.3.3 Risk due to falling or ejected objects	5.2.5/5.2.7/5.2.10.1/5.2.10.3/5.3.6	
1.3.7 Risks related to moving parts	5.5.1/5.5.2.1/5.5.3.1	
1.3.8 Choice of protection against risks arising from moving parts	5.5.1/5.5.2.1/5.5.3.1	
1.3.9 Risks of uncontrolled movements	5.2.6.1/5.2.10.2/5.4.1/5.4.2.1/5.4.6/5.4.7/5.5.1/5.5.3.1	

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
<b>1.4 required characteristics of guards and protective devices</b>	5.3.2/5.4.1/5.4.7/5.5.2.1 c)/5.5.3.1 b)	
1.5.1 Electricity supply	5.8.1	
1.5.4 Errors of fitting		not covered
1.6.1 Machinery maintenance	5.5.2.1/5.5.3.1/5.5.3.5	
<b>1.7.1</b>	5.2.6.2/7.5	
<b>1.7.3</b>	7.2	
<b>1.7.4</b>	7.4	

**WARNING 1** — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

**WARNING 2** — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

# Contents

Page

<b>Foreword</b>	<b>v</b>
<b>Introduction</b>	<b>vi</b>
<b>1 Scope</b>	<b>1</b>
<b>2 Normative references</b>	<b>1</b>
<b>3 Terms and definitions</b>	<b>2</b>
<b>4 List of significant hazards</b>	<b>3</b>
<b>5 Safety requirements and/or measures</b>	<b>3</b>
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
<b>6 Verification of the safety requirements and/or measures</b>	<b>32</b>
<b>7 Information for use</b>	<b>37</b>
7.1 General	37
7.2 Marking	37
7.3 Warnings	38
7.4 Instruction handbook	38

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