

DIN EN ISO 16092-3:2019-08 (E)

Machine tools safety - Presses - Part 3: Safety requirements for hydraulic presses (ISO 16092-3:2017)

Contents	Page
European foreword.....	4
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered	5
Foreword	6
Introduction	7
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions	8
4 List of significant hazards	9
5 Safety requirements and/or measures	9
5.1 General.....	9
5.2 Basic design considerations	9
5.2.1 Hydraulic and pneumatic systems — Common features	9
5.2.2 Pneumatic systems.....	9
5.2.3 Hydraulic systems.....	9
5.2.4 Electric systems	9
5.3 Mechanical hazards in the tools area	10
5.3.1 Major danger zone	10
5.3.2 Safeguarding measures.....	10
5.3.3 Other safety requirements	10
5.3.4 Release of trapped persons between the tools.....	10
5.3.5 Release of persons trapped inside enclosed areas	10
5.3.6 Prevention of gravity fall during maintenance or repair	10
5.3.7 Prevention of unintended gravity fall during production (down-stroking press).....	10
5.4 Control and monitoring system	11
5.4.1 Control and monitoring functions.....	11
5.4.2 Muting	11
5.4.3 Selection devices	12
5.4.4 Position sensors.....	12
5.4.5 Control devices.....	12
5.4.6 Valves.....	12
5.4.7 Performance level of safety functions	12
5.5 Tool-setting, trial strokes, maintenance and lubrication.....	34
5.5.1 Movement during tool-setting, maintenance and lubrication.....	34
5.5.2 Movement by inching device	34
5.6 Mechanical hazards — Other	34
5.7 Slips, trips and falls.....	34
5.8 Protection against other hazards	34
6 Verification of the safety requirements and/or measures	34

7	Information for use	36
7.1	General	36
7.2	Marking	36
7.3	Warnings	36
7.4	Instruction handbook	36
	Annex A (informative) Significant hazards, hazardous situations and protective measures	37
	Annex B (normative) Calculation of minimum distances.....	38
	Annex C (normative) The response time of the hydraulic system.....	39
	Annex D (informative) Interlocking devices associated with guards.....	40
	Annex E (informative) The connection of the stopping time measurement equipment	43
	Annex F (informative) Examples for hydraulic speed limitation.....	44
F.1	General	44
F.2	EXAMPLE 1	44
F.3	EXAMPLE 2	46
F.4	EXAMPLE 3	47
	Bibliography	48