

DIN EN 692:2006-02 (E)

Machine tools - Mechanical presses - Safety

Contents	Page
1 Scope	5
2 Normative references	6
3 Terms and definitions	7
3.1 Terms and definitions	7
3.2 Abbreviations	10
4 List of significant hazards	11
5 Safety requirements and/or measures	14
5.1 Introduction	14
5.2 Basic design considerations	14
5.2.1 Brakes and clutches	14
5.2.2 Presses with part revolution clutches (friction clutches)	15
5.2.3 Hydraulic and pneumatic systems - Common features	15
5.2.4 Pneumatic systems	16
5.2.5 Hydraulic systems	16
5.2.6 Slide adjustment and stroke adjustment	16
5.3 Mechanical hazards in the tools area	17
5.4 The control and monitoring system	21
5.4.1 Control and monitoring functions	21
5.4.2 Part revolution clutch presses: redundancy and monitoring of clutch/brake control systems, and overrun monitoring for single cycle use (see Tables 2, 3 and 4)	22
5.4.3 Muting	24
5.4.4 Programmable electronic systems (PES), programmable pneumatic systems (PPS) and safety related functions	24
5.4.5 Selector switches	24
5.4.6 Isolation switch	25
5.4.7 Position switches (see 10.1.4 of EN 60204-1:1997)	25
5.4.8 Control devices	25
5.4.9 Valves	25
5.5 Tool-setting, trial strokes, maintenance and lubrication	26
5.6 Mechanical hazards - other	27
5.7 Slips, trips and falls	27
5.8 Protection against other hazards	27
5.8.1 Electrical hazards	27
5.8.2 Thermal hazards	28
5.8.3 High pressure fluid ejection hazards	28
5.8.4 Hazards generated by noise	28
5.8.5 Hazards generated by vibration	29
5.8.6 Hazards generated by materials and substances	29
5.8.7 Hazards generated by neglecting ergonomic principles	30
6 Verification of the safety requirements and/or measures	39
7 Information for use	47
7.1 Marking	47
7.2 Instruction handbook	48
Annex A (normative) Interlocking guards	50

A.1	Presses with part revolution clutches	50
Annex B (normative)	Calculation of minimum safety distances	53
Annex C (informative)	Electro-sensitive protective equipment (ESPE) using active opto-electronic protective devices (AOPDs)	55
Annex D (informative)	Closed tools	56
Annex E (informative)	The setting of the rotary cam arrangement	57
E.1	Basic features of the eccentric adjustment and rotary cam arrangement	57
E.2	Determination of the position where muting begins	63
Annex F (informative)	Determination of the overall response time T	66
Annex G (normative)	Conditions for noise measurement of mechanical presses	70
Annex ZA (informative)	Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC, amended by Directive 98/79 EC	72
Bibliography		70