

ISO 16092-4:2019-11 (E)

Machine tools safety - Presses - Part 4: Safety requirements for pneumatic presses

Contents	Page
Foreword	iv
Introduction	v
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	2
5.3.1 Major danger zone	2
5.3.2 Safeguarding measures	2
5.3.3 Other safety requirements	2
5.3.4 Release of trapped persons between the tools	2
5.3.5 Release of persons trapped inside enclosed 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	3
5.4.1 Control and monitoring functions	3
5.4.2 Muting	4
5.4.3 Selection devices	4
5.4.4 Position sensors	4
5.4.5 Control devices	4
5.4.6 Valves	4
5.4.7 Performance level of safety functions	4
5.5 Tool-setting, trial strokes, maintenance and lubrication	19
5.6 Mechanical hazards -- Other	19
5.7 Slips, trips and falls	19
5.8 Protection against other hazards	19
6 Verification of the safety requirements and/or measures	19
7 Information for use	20
7.1 General	20
7.2 Marking	20
7.3 Warnings	21
7.4 Instruction handbook	21
Annex A (informative) Additional significant hazards, hazardous situations and protective measures	22
Annex B (normative) Calculation of minimum distances	23

Annex C (informative) Examples and principles of pneumatic press and power interlocking	24
Bibliography	27