

ISO 23125:2015-01 (E)

Machine tools - Safety - Turning machines

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	4
3.1	General terms	4
3.2	Terms related to parts of turning machines	5
3.3	Terms related to modes of operation -- Mandatory and optional modes of operation for turning machines	7
3.4	Terms related to sizes and groups of turning machines defined	8
3.5	Terms related to maximum permissible spindle speeds and axes feeds	13
4	List of significant hazards	14
4.1	General	14
4.2	Main hazard zones	15
4.3	Significant hazards and hazardous situations covered by this International Standard	15
5	Safety requirements and/or protective measures	19
5.1	General requirements	19
5.1.1	Overview	19
5.1.2	Required characteristics for guards for all machine groups	19
5.2	Specific requirements resulting from mechanical hazards identified in Clause 4	20
5.2.1	Group 1 machines	20
5.2.2	Groups 2, 3 and 4 machines	21
5.2.3	Workpiece clamping conditions	24
5.2.4	Modes of machine operation	25
5.2.5	Optional or additional equipment for turning machines	29
5.3	Specific requirements resulting from electrical hazards	32
5.4	Specific requirements resulting from noise hazards	32
5.5	Specific requirements resulting from radiation hazards	32
5.6	Specific requirements resulting from material or substance hazards	33
5.7	Specific requirements resulting from neglect of ergonomic principles hazards	34
5.8	Specific requirements resulting from unexpected start-up, over-run or over-speed hazards	35
5.9	Specific requirements resulting from variation in rotational speed of tool hazards	37
5.10	Specific requirements resulting from failure of the power supply hazards	37
5.11	Specific requirements resulting from failure of the control circuit hazards	38
5.12	Specific requirements resulting from errors of fitting hazards	39
5.13	Specific requirements resulting from ejected fluids or objects hazards	39
5.13.1	General requirements	39
5.13.2	Guards for large vertical Group 3 machines (NC turning machines and turning centres) ..	40
5.13.3	Guards for large horizontal Group 3 machines (NC turning machines and turning centres)	41
5.14	Specific requirements resulting from loss of stability hazards	41
5.15	Specific requirements resulting from slips, trips and fall of persons hazards	41
5.16	Verification of the safety requirements and/or protective measures	41
6	Information for use	44

6.1	Marking	44
6.2	Instruction for use	44
6.2.1	General	44
6.2.2	Tooling	46
6.2.3	Workpiece clamping	46
6.2.4	Machine functions accessible from the NC panel	47
6.2.5	Restart	47
6.2.6	Noise	47
6.2.7	Ancillary handling devices	48
6.2.8	Residual risks to be addressed by the machinery user	48
6.2.9	Installation instructions for the turning machine	49
6.2.10	Cleaning instruction for the machine	49
Annex A (normative) Impact test method for guards on turning machines		50
Annex B (informative) Test equipment for impact test and examples of materials		55
Annex C (informative) Calculation of direct impact energy		58
Annex D (informative) Example of checklist for safety functions		60
Annex E (informative) Examples of exhaust and extinguishing systems		62
Annex F (informative) Example of the determination of performance level for interlocked guard		66
Bibliography		71