

# ISO 23125:2015-01 (E)

## Machine tools - Safety - Turning machines

---

<b>Contents</b>		<b>Page</b>
Foreword .....		v
Introduction .....		vi
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>1</b>
<b>3</b>	<b>Terms and definitions .....</b>	<b>4</b>
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
<b>4</b>	<b>List of significant hazards .....</b>	<b>14</b>
4.1	General .....	14
4.2	Main hazard zones .....	15
4.3	Significant hazards and hazardous situations covered by this International Standard .....	15
<b>5</b>	<b>Safety requirements and/or protective measures .....</b>	<b>19</b>
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
<b>6</b>	<b>Information for use .....</b>	<b>44</b>

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