DIN EN ISO 23125:2015-04 (E)

Machine tools - Safety - Turning machines (ISO 23125:2015)

Contents

Page

Foreword 4

Introduction 5

1 Scope 6

2 Normative references 6

3 Termsanddefinitions 9
3.1 General terms 9
3.2 Terms related to parts of turning machines 10
3.3 Terms related to modes of operation -- Mandatory and optional modes of operation for turning machines 12
3.4 Terms related to sizes and groups of turning machines defined 13
3.5 Terms related to maximum permissible spindle speeds and axes feeds 18

4 Listofsignificanthazards 19
4.1 General 19
4.2 Main hazard zones 19
4.3 Significant hazards and hazardous situations covered by this International Standard 20

5 Safety requirements and/or protective measures 24
5.1 General requirements 24
5.1.1 Overview 24
5.1.2 Required characteristics for guards for all machine groups 25
5.2 Specific requirements resulting from mechanical hazards identified in Clause 4 25
5.2.1 Group 1 machines 25
5.2.2 Groups 2, 3 and 4 machines 26
5.2.3 Workpiece clamping conditions 29
5.2.4 Modes of machine operation 30
5.2.5 Optional or additional equipment for turning machines 35
5.3 Specific requirements resulting from electrical hazards 37
5.4 Specific requirements resulting from noise hazards 38
5.5 Specific requirements resulting from radiation hazards 38
5.6 Specific requirements resulting from material or substance hazards 38
5.7 Specific requirements resulting from neglect of ergonomic principles hazards 39
5.8 Specific requirements resulting from unexpected start-up, over-run or over- speed hazards 40
5.9 Specific requirements resulting from variation in rotational speed of tool hazards 42
5.10 Specific requirements resulting from failure of the power supply hazards 43
5.11 Specific requirements resulting from failure of the control circuit hazards 43
5.12 Specific requirements resulting from errors of fitting hazards 45
5.13 Specific requirements resulting from ejected fluids or objects hazards 45
5.13.1 General requirements 45
5.13.2 Guards for large vertical Group 3 machines (NC turning machines and turning centres) 46
5.13.3 Guards for large horizontal Group 3 machines (NC turning machines and turning centres) 46
5.14 Specific requirements resulting from loss of stability hazards 47
5.15 Specific requirements resulting from slips, trips and fall of persons hazards 47
5.16 Verification of the safety requirements and/or protective measures 47

6 Information for use 49

6.1 Marking 50
6.2 Instruction for use 50
6.2.1 General 50
6.2.2 Tooling 52
6.2.3 Workpiece clamping 52
6.2.4 Machine functions accessible from the NC panel 53
6.2.5 Restart 53
6.2.6 Noise 53
6.2.7 Ancillary handling devices 54
6.2.8 Residual risks to be addressed by the machinery user 54
6.2.9 Installation instructions for the turning machine 55
6.2.10 Cleaning instruction for the machine 55

Annex A (normative) Impact test method for guards on turning machines 56

Annex B (informative) Test equipment for impact test and examples of materials 61

Annex C (informative) Calculation of direct impact energy 64

Annex D (informative) Example of checklist for safety functions 66

Annex E (informative) Examples of exhaust and extinguishing systems 68

Annex F (informative) Example of the determination of performance level for interlocked guard 72

Bibliography 78

Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC 77