



**SLOVENSKI STANDARD**  
**SIST EN 12750:2002+A1:2009**  
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**Varnost lesnoobdelovalnih strojev - Rezkalnik za štiristransko obdelavo**

Safety of woodworking machines - Four-sided moulding machines

Sicherheit von Holzbearbeitungsmaschinen - Fräsmaschinen für vierseitige Bearbeitung

Sécurité des machines pour le travail du bois - Machines à moulurer sur quatre faces

**Ta slovenski standard je istoveten z: EN 12750:2001+A1:2009**

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**ICS:**

79.120.10      Lesnoobdelovalni stroji      Woodworking machines

**SIST EN 12750:2002+A1:2009**      **en**

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EUROPEAN STANDARD

**EN 12750:2001+A1**

NORME EUROPÉENNE

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## Safety of woodworking machines - Four-sided moulding machines

Sécurité des machines pour le travail du bois - Machines à moulurer sur quatre faces

Sicherheit von Holzbearbeitungsmaschinen - Fräsmaschinen für vierseitige Bearbeitung

This European Standard was approved by CEN on 4 June 2001 and includes Amendment 1 approved by CEN on 16 July 2009.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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## Foreword

This document (EN 12750:2001+A1:2009) has been prepared by Technical Committee CEN/TC 142 "Woodworking machines - Safety", the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2010, and conflicting national standards shall be withdrawn at the latest by February 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1, approved by CEN on 2009-07-16.

This document supersedes EN 12750:2001.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\square_{A1}$   $\square_{A1}$ .

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of  $\square_{A1}$  Machinery Directives  $\square_{A1}$ .

$\square_{A1}$  For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document.  $\square_{A1}$

Organisations contributing to the preparation of this European Standard include European Committee of Woodworking Machinery Manufacturers Association "EUMABOIS".

The annexes B and C are normative, the annexes A,  $\square_{A1}$  ZA and ZB  $\square_{A1}$  are informative.

The European Standards produced by CEN/TC 142 are particular to woodworking machines and complement the relevant A and B standards on the subject of general safety (see introduction of  $\square_{A1}$  EN ISO 12100-1:2003  $\square_{A1}$  for a description of A, B and C standards).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

**EN 12750:2001+A1:2009 (E)****Introduction**

This European Standard is a type "C" standard as defined in <sup>A1</sup> EN ISO 12100-1:2003 <sup>A1</sup>.

The extent to which hazards are covered is indicated in the scope of this European Standard.

The requirements of this European Standard concern designers, manufacturers, suppliers and importers of four-sided moulding machines.

This European Standard also includes information which the manufacturer shall provide to the user.

Common requirements for tooling are given in <sup>A1</sup> EN 847-1:2005 <sup>A1</sup>.

**1 Scope**

<sup>A1</sup> This document specifies all significant hazards, hazardous situations and events as listed in Clause 4 which are relevant to four sided moulding machines with a maximum working width of 350 mm hereafter referred to as "machines" designed to cut solid wood, chipboard, fibreboard, plywood and also these materials where these are covered with plastic laminate or edgings. <sup>A1</sup>

<sup>A1</sup> *deleted text* <sup>A1</sup>

For Computer Numerically Controlled machines (CNC) this European Standard does not cover hazards related to Electro-Magnetic Compatibility (EMC).

This European Standard does not apply to: <https://standards.iteh.ai/catalog/standards/sist/afdc4d5d-05a3-4aaa-9c01-8c204bdbf499/sist-en-12750-2002a1-2009>

- a) hazards relating to infeed devices (magazines, hoppers, etc.);
- b) machines designed for machining logs which have not previously been machined.

This European Standard is primarily applicable to machines which are manufactured after the date of issue of this European Standard.

**2 Normative references**

<sup>A1</sup> The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. <sup>A1</sup>

<sup>A1</sup> *deleted text* <sup>A1</sup>

<sup>A1</sup> EN 614-1:2006, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles* <sup>A1</sup>

<sup>A1</sup> EN 847-1:2005 <sup>A1</sup>, *Tools for woodworking — Safety requirements — Part 1: Milling tools, circular saw blades*

<sup>A1</sup> EN 894-1:1997, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays and control actuators*

EN 894-2:1997, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays*

EN 894-3:2000, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators* <sup>A1</sup>

EN 953:1997, *Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards*

<sup>A1</sup> *deleted text* <sup>A1</sup>

EN 982:1996, *Safety requirements for fluid power systems and components — Hydraulics*

EN 983:1996, *Safety requirements for fluid power systems and components — Pneumatics*

<sup>A1</sup> EN 1005-1:2001, *Safety of machinery — Human physical performance — Part 1: Terms and definitions*

EN 1005-2:2003, *Safety of machinery — Human physical performance — Part 2: Manual handling of machinery and component parts of machinery*

EN 1005-3:2002, *Safety of machinery — Human physical performance — Part 3: Recommended force limits for machinery operation*

EN 1005-4:2005, *Safety of machinery — Human physical performance — Part 4: Evaluation of working postures and movements in relation to machinery*

EN 1037:1995, *Safety of machinery — Prevention of unexpected start-up* <sup>A1</sup>

EN 1088:1995, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

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<sup>A1</sup> EN ISO 354:2007 <sup>A1</sup>, *Acoustics — Measurement of sound absorption in a reverberation room* <sup>A1</sup> (ISO 354:2003) <sup>A1</sup>

<sup>A1</sup> EN 50370-1:2005, *Electromagnetic compatibility (EMC) — Product family standard for machine-tools — Part 1: Emission*

EN 50370-2:2003, *Electromagnetic compatibility (EMC) — Product family standard for machine-tools — Part 2: Immunity* <sup>A1</sup>

<sup>A1</sup> EN 60204-1:2006 <sup>A1</sup>, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements* <sup>A1</sup> (IEC 60204-1:2005, modified) <sup>A1</sup>

<sup>A1</sup> EN 60439-1:1999, *Low-voltage switchgear and controlgear assemblies — Part 1: Type-tested and partially type-tested assemblies* (IEC 60439-1:1999) <sup>A1</sup>

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code)* (IEC 60529:1989)

<sup>A1</sup> EN 60947-4-1:2001 <sup>A1</sup>, *Low voltage switchgear and control gear — Part 4: Contactors and motor starters — Section 1: Electromechanical contactors and motor starters* <sup>A1</sup> (IEC 60947-4-1:2000) <sup>A1</sup>

<sup>A1</sup> EN 60947-5-1:2004 <sup>A1</sup>, *Low voltage switchgear and control gear — Part 5-1: Control circuit devices and switching elements — Electro-mechanical control circuit devices* <sup>A1</sup> (IEC 60947-5-1:2003) <sup>A1</sup>

<sup>A1</sup> EN 61310-1:2008, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, auditory and tactile signals* (IEC 61310-1:2007) <sup>A1</sup>

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EN ISO 3741:1999, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Precision methods for broad-band sources in reverberation rooms (ISO 3741:1999)*

EN ISO 3743-1:1995, *Acoustics — Determination of sound power levels of noise sources — Engineering methods for small, movable sources in reverberant fields — Part 1: Comparison method for hard walled test rooms (ISO 3743-1:1994)*

EN ISO 3743-2:1996, *Acoustics — Determination of sound power levels of noise sources — Engineering methods for small, movable sources in reverberant fields — Part 2: Method for special reverberation test rooms (ISO 3743-2:1994)*

EN ISO 3744:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994)*

**A1** EN ISO 3745:2003, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Precision methods for anechoic and semi-anechoic rooms (ISO 3745:2003)* **A1**

EN ISO 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method employing an enveloping measurement surface over a reflecting plane (ISO 3746:1995)*

EN ISO 4871:1996, *Acoustics — Determination and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 9614-1:1995, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurement at discrete points (ISO 9614-1:1993)*

EN ISO 11202:1995, *Acoustics — Noise emitted by machinery and equipment — Survey method for the measurement of emission sound pressure levels at the workstation and at other specified positions - Survey method in situ (ISO 11202:1995)*

EN ISO 11204:1995, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at the workstation and at other specified positions — Method requiring environmental corrections (ISO 11204:1995)*

EN ISO 11688-1:1998, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning (ISO/TR 11688-1:1995)*

**A1** EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology and methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)* **A1**

**A1** EN ISO 13849-1:2008, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)* **A1**

**A1** EN ISO 13850:2008, *Safety of machinery — Emergency stop — Principles for design (ISO 13850:2006)* **A1**

**A1** EN ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2008)* **A1**

**A1** ISO 230-1:1996 **A1**, *Test code for machine tools — Part 1: Geometric accuracy of machines operating under no-load or finishing conditions*

**A1** *deleted text* **A1**

ISO 7960:1995, *Airborne noise emitted by machine tools — Operating conditions for woodworking machines*



Ⓐ HD 21.1 S4:2002, *Cables of rated voltages up to and including 450/750 V and having thermoplastic insulation — Part 1: General requirements* Ⓐ

Ⓐ HD 22.1 S4:2002, *Cables of rated voltages up to and including 450/750 V and having cross-linked insulation — Part 1: General requirements* Ⓐ

### 3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply:

#### 3.1

##### **four-sided moulding machine**

a machine where the workpiece once loaded manually or by magazine, moves by an integrated feed mechanism. Machines where the first feed roller is beyond the first tool are, for the purpose of this European Standard, integrated fed machines. The machine has at least four work units, one on each side, with rotating planing or moulding tools. The tool spindles have horizontal and/or vertical axes which can be adjusted manually or under power.

The machine can be fitted with additional work units such as universal spindles or glass bead saw units

#### 3.2

##### **universal spindle**

work unit, the position of which can be changed manually or under power so as to allow it to work at different positions around the workpiece

#### 3.3

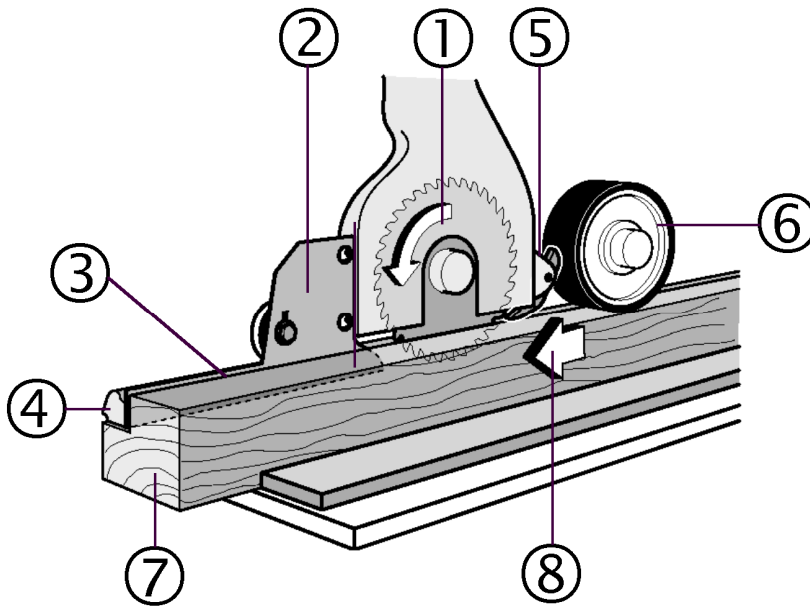
##### **glass bead saw unit**

work unit fitted with a sawblade to cut out a glass bead from the machined profile of the workpiece (e.g. see Figure 1)

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**Key**

- 1 Glass bead sawblade
- 2 Riving knife
- 3 Guiding channel for bead ledge
- 4 Bead ledge
- 5 Anti-kickback finger
- 6 Feed roller
- 7 Workpiece
- 8 Feed direction

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**Figure 1 — Example of a glass bead saw unit**

**3.4 hydraulic tool fixing device**  
 device for clamping the tool to the spindle using hydraulic pressure

**3.5 integrated feed**  
 feed mechanism for the workpiece or tool which is integrated with the machine and where the workpiece or machine element with incorporated tool are held and controlled mechanically during the machining operation

**3.6 loading the machine**  
 operation where the workpiece is manually or automatically placed on to a carriage, magazine, lift, hopper, movable bed, conveyor or the presentation of the workpiece to an integrated feed device

**3.7 cutting against the feed**  
 when the relative rotational direction of the tool cutting point is opposite to the direction of the feed

**3.8 climb cutting**  
 when the relative rotational direction of the tool cutting point is in the same direction as the feed

**3.9 cutting area of the tool**  
 area of the tool involved in the cutting process

**3.10****non-cutting area of the tool**

area of the tool which is not involved in the cutting process

**3.11****machine actuator**

power mechanism used to effect motion of a machine

**3.12****ejection**

unexpected movement of the workpiece, parts of it or part of the machine from the machine during processing

**3.13****kickback**

particular form of ejection describing the unexpected movement of the workpiece, part of it (or part of the machine) opposite to the direction of feed during processing

NOTE The words in brackets are not applicable to this machine.

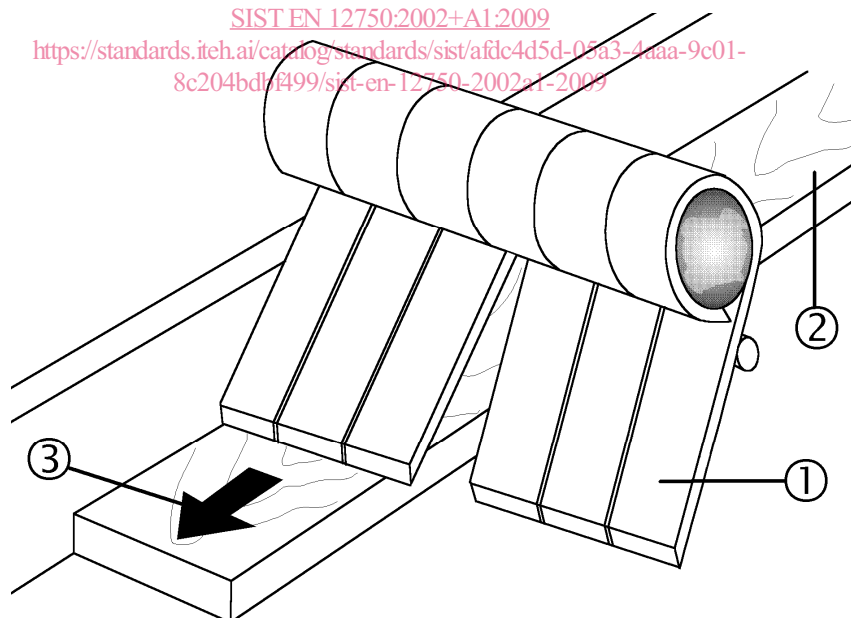
**3.14****anti-kickback device**

device which either reduces the possibility of kickback or arrests the motion during kickback of the workpiece or parts of it (or parts of the machine, see Figure 1)

NOTE The words in brackets are not applicable to this machine.

**3.15****catching finger device**

device designed to prevent the ejection of divided workpieces (see Figure 2)

**Key**

- 1 Catching finger
- 2 Workpiece
- 3 Feed direction

**Figure 2 — Example of catching fingers**

**EN 12750:2001+A1:2009 (E)****3.16****run-up time**

time elapsed from the actuation of the start control device until the spindle reaches its intended speed

**3.17****run-down time**

time elapsed from the actuation of the stop control device up to complete spindle standstill

**3.18****speed range**

maximum and minimum speeds within which the tool spindle or tool is designed to operate

**3.19****A1 information from the supplier A1**

statements, sales literature, leaflets or other documents where a manufacturer (or supplier) declares either the characteristics or the compliance of the material or product to a relevant standard

**3.20****integral enclosure**

guarding designed to fit close to the machine and provide a measure of sound attenuation and where certain setting adjustments may be available outside it

**3.21****complete enclosure**

total machine enclosure primarily designed for noise attenuation and to permit the operator to move around freely within it and where all machine settings and adjustments are available inside it. Access is normally through a door/opening

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**4 A1 List of significant hazards A1**

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A1 This clause contains all significant hazards, hazardous situations and events (see EN 1050:1996) as far as they are dealt with in this document, identified by risk assessment as significant for the machines as defined in the scope and which require action to eliminate or reduce the risk. This document deals with these significant hazards by defining safety requirements and/ or measures or by reference to relevant standards.

These hazards are listed in Table 1 in accordance with Annex A of EN 1050:1996.

Table 1 — List of significant hazards

No	Hazards, hazardous situations and hazardous events	EN ISO 12100		Relevant clause(s) of this document
		Part 1: 2003	Part 2: 2003	
<b>1</b>	<b>Mechanical hazards</b> due to machine parts or work pieces due to			
	a) shape;	4.2	4.2.1, 4.2.2, 5	5.2.2, 5.2.3, 5.2.5, 5.2.6, 5.3.2
	b) relative location;			5.1.2, 5.1.5, 5.2.5, 5.2.6, 5.2.7
	c) mass and stability (potential energy of elements which may move under the effect of gravity);			5.3.5
	d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion);			5.2.5
	e) mechanical strength.			5.2.2, 5.2.3, 5.2.5, 5.2.6
	- accumulation of energy inside the machinery by:			
	g) liquids and gases under pressure;	4.2	4.10, 5.5.4	5.3.7, 5.3.8
1.1	Crushing hazard	4.2.1		5.2.1 ; 5.2.7
1.2	Shearing hazard			5.2.7
1.3	Cutting or severing hazard			5.2.2 ; 5.2.3 ; 5.2.4 ; 5.2.7 ;
1.4	Entanglement hazard			5.2.3 ; 5.2.4 ; 5.2.6 ; 5.2.7
1.5	Drawing-in or trapping hazard			5.2.7
1.6	Impact hazard			5.2.7.2
1.9	High pressure fluid injection or ejection hazard	4.2.1	4.10	5.3.8
<i>to be continued</i>				

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Table 1 — List of significant hazards (continued)

No	Hazards, hazardous situations and hazardous events	EN ISO 12100		Relevant clause(s) of this document
		Part 1: 2003	Part 2: 2003	
<b>2</b>	<b>Electrical hazards</b> due to:			
2.1	Contact of persons with live parts (direct contact)	4.3	4.9, 5.5.4	5.3.4 ; 5.3.15 ; 5.3.16
2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	4.3	4.9	5.3.4 ; 5.3.15 ; 5.3.16
<b>3</b>	<b>Thermal hazards</b> resulting in:			
3.1	Burns, scalds and other injuries by a possible contact of persons with objects or materials with an extreme high temperature and also by the radiation of heat sources	4.4		5.3.1 ; 5.3.9
<b>4</b>	<b>Hazards generated by noise</b> , resulting in:			
4.1	Hearing loss (deafness), other physiological disorders (loss of balance, loss or awareness)	4.5	4.2.2, 5	5.3.2
<b>7</b>	<b>Hazards generated by materials and substances</b> (and their constituent elements) processed or used by the machinery			
7.1	Hazards from contact with or inhalation of harmful fluids and dusts	4.8	4.3 b), 4.4	5.3.3
7.2	Fire	4.8	4.4	5.3.1
<b>8</b>	<b>Hazards generated by neglecting ergonomic principles in machinery design related to</b>			
8.1	Unhealthy postures or excessive effort	4.9	4.7, 4.8.2, 4.11.12, 5.5.5, 5.5.6	5.1.2 ; 5.3.5
8.3	Neglected use of personal protection equipment		4.8.7	6.3
8.4	Local lighting		4.8.6	5.3.6
				<i>to be continued</i>

Table 1 — List of significant hazards (continued)

No	Hazards, hazardous situations and hazardous events	EN ISO 12100		Relevant clause(s) of this document
		Part 1: 2003	Part 2: 2003	
<b>10</b>	<b>Unexpected start-up, unexpected overrun/overspeed</b> (or any similar malfunction) from:			
10.1	Failure/disorder of the control system		4.11, 5.5.4	5.1.1
10.2	Restoration of energy supply after an interruption		4.11.4	5.1.1 ; 5.1.12 ; 5.1.13
10.3	External influences on electrical equipment		4.11.11	5.3.12
<b>11</b>	<b>Impossibility of stopping the machine in the best possible conditions</b>		4.11.1, 4.11.3, 5.5.2	5.1.2 ; 5.1.4 ; 5.1.5
<b>12</b>	<b>Variations in the rotational speed of tools</b>		4.2.2, 4.3	5.1.7
<b>13</b>	<b>Failure of the power supply</b>		4.11.4	5.3.15
<b>14</b>	<b>Failure of the control circuit</b>		4.11, 5.5.4	5.1.1
<b>15</b>	<b>Errors of fitting</b>		4.7, 6.5	5.2.7.1, 6.3
<b>16</b>	<b>Break-up during operation</b>	4.2.2	4.3	5.2.2
<b>17</b>	<b>Falling or ejected objects or fluids</b>		4.3, 4.10	5.2.2 ; 5.2.3 ; 5.2.5 ; 5.2.6 ; 5.2.7; 5.3.15
<b>18</b>	<b>Loss of stability / overturning of machinery</b>		5.2.6	5.2.1

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## 5 Safety requirements and/or measures

For guidance in connection with risk reduction by design see 4.1 of EN ISO 12100-2:2003 and in addition:

### 5.1 Controls

#### 5.1.1 Safety and reliability of control systems

For the purpose of this European Standard safety related parts of control systems means the system from and including the initial manual control or position detector or other sensor to the point of input to the final actuator or element, e.g. motor. The safety related control systems of this machine are those for:

- starting (see 5.1.3);
- normal (manual) stopping (see 5.1.4);
- emergency stop (see 5.1.5);
- spindle speed (see 5.1.7);
- interlocking (see 5.2.7.1 and 5.2.7.4);