

Safety of woodworking machines — Band sawing machines

ICS 79.120.10

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The UK participation in its preparation was entrusted to Technical Committee MTE/23, Woodworking machines.

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English Version

Safety of woodworking machines - Band sawing machines

Sécurité des machines pour le travail du bois - Machines à
scier à ruban

Sicherheit von Holzbearbeitungsmaschinen -
Bandsägemaschinen

This European Standard was approved by CEN on 6 May 1999 and includes Amendment 1 approved by CEN on 30 July 2009.

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Foreword

This document (EN 1807:1999+A1:2009) has been prepared by Technical Committee CEN/TC 142 "Woodworking machines - Safety" the Secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by March 2010, and conflicting national standards shall be withdrawn at the latest by March 2010.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 2009-07-30.

This document supersedes EN 1807:1999.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **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 **A1** Machinery Directives **A1**.

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

A1 This European Standard also supports essential requirements of the Outdoor Noise Directive 2000/14/EC. **A1**

Organisations contributing to the preparation of this European Standard include:

The European Manufacturers Association "EUMABOIS".

Normative and informative annexes to this European Standard are listed in the Contents list.

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 **A1** EN ISO 12100-1:2003 **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.

Introduction

This European Standard has been prepared to be a harmonised standard to provide one means of conforming to the Essential Health and Safety Requirements of the Machinery Directive and associated EFTA Regulations. This European Standard is a type "C" standard as defined in [A1](#) EN ISO 12100-1:2003 [A1](#).

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

The requirements of this standard concern designers, manufacturers, suppliers and importers of band sawing machines, re-sawing machines and log sawing machines.

This European Standard also includes information to be provided by the manufacturer to the user.

1 Scope

[A1](#) This document specifies all significant hazards, hazardous situations and events as listed in Clause 4 which are relevant to stationary and displaceable band sawing machines with either manual or automatic loading and/or unloading, hereinafter referred to as "machines" designed to cut solid wood, chipboard, fibreboard, plywood and also these materials where they are covered with plastic laminate or edgings. [A1](#)

[A1](#) *deleted text* [A1](#)

[A1](#) *deleted text* [A1](#) This European Standard does not cover the hazards related to Electromagnetic Compatibility (EMC) as required by the EMC Directive 89/336/EEC of 03-05-89.

This European Standard does not apply to:

- [A1](#) hand held motor-operated electric tools or any adaptation permitting their use in a different mode, i.e. bench mounting; [A1](#)

[A1](#) NOTE 1 Hand-held motor operated electric tools are covered by the requirements of EN 60745-1:2006 together with EN 60745-2-20:2003. [A1](#)

- [A1](#) transportable machines set up on a bench or a table similar to a bench, which are intended to carry out work in a stationary position, capable of being lifted by one person by hand. [A1](#)

[A1](#) NOTE 2 Transportable electrically driven machines are covered by the requirements of EN 61029-1:2000 together with EN 61029-2-5:2002. [A1](#)

This European Standard does not cover the hazards arising from machining processes (e.g. milling and sawing) of related to associated machines e.g. canters and circular saws.

This European Standard is primarily directed at machines which are manufactured after the date of issue of this standard.

2 Normative references

 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. 

 *deleted text* 

 EN 349:1993 , *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

 *deleted text* 

 EN 614-1:2006, *Safety of machinery — Ergonomic design principles — Part 1: Terminology and general principles* 

 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* 

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

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

 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* 

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

 EN 1760-1:1997, *Safety of machinery — Pressure sensitive protective devices — Part 1: General principles for the design and testing of pressure sensitive mats and pressure sensitive floors* 

 EN 60204-1:2006 , *Safety of machinery — Electrical equipment of machines — Part 1: Specification for general requirements*  (IEC 60204-1:2005, modified) 

 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* 

EN 60529:1991, *Specification for degree of protection provided by enclosure (IP code) (IEC 60529:1989)*

 EN 60825-1:2007 , *Safety of laser products — Equipment classification requirements and user's guide*
 (IEC 60825:2007) 

 EN 60947-4-1:2001 , *Specification for low voltage switchgear and control gear — Part 4: Contractors and motor starters — Section 1: Electromechanical contractors and motor starters*
 (IEC 60947-4-1:2000) 

 EN 60947-5-1:2004 , *Specification for low voltage switchgear and control gear — Part 5: Control circuits, devices and switching elements — Section 1: Electromechanical control circuit devices*
 (IEC 60947-5-1:2003) 

 EN 61029:2000 , *Safety of transportable motor operated electric tools — Part 1: General requirements*
 (IEC 61029-1:1990, modified) 

 EN 61029-2-5:2002, *Safety of transportable motor-operated electric tools — Part 2: Particular requirements for band saws (IEC 61029-2-5:1993+A1:2001, modified)* 

 CLC/TS 61496-2:2006 , *Safety of machinery — Electro-sensitive protective equipment —  Part 2: Particular requirements for equipment using active opto-electronic protective devices (AOPDs)*
(IEC 61496-2:2006) 

EN ISO 3743-1:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering methods for small, moveable 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 using sound pressure — Engineering methods for small, moveable sources in reverberant fields — Part 2: Methods for special reverberant test rooms (ISO 3743-2:1996)*

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 3744:1995)*

 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)* 

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

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

EN ISO 11202:1995, *Acoustics — Noise emitted by machinery and equipment — 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 — Measurement 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)* 

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

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

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

 ISO 1940-1:2003, *Mechanical vibration — Balance quality requirements for rotors in a constant (rigid) state — Part 1: Specification and verification of balance tolerances* 

 *deleted text* 

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

 *deleted text* 

3 Terms and definitions

3.1 Definitions

For the purposes of this standard the following definitions apply:

3.1.1

band sawing machine

a sawing machine with one or more saw blades in the form of continuous bands each mounted on and running between two or more band wheels

3.1.2

saw blade straining

the force exerted on the saw blade to keep it in position on the band wheels during cutting (see figure 15)

3.1.3

tensioning

the process used to form the cross-section of the saw blade, either by rolling or hammering, in order to ensure that the front and back edges of the saw blade grip the band wheels

3.1.4

Saw blade tracking

the means used to maintain the position of the saw blade on the band wheels (see figure 16)

3.1.5

dogging

the means of securing a log for cutting

3.1.6

table band saw

a hand fed band sawing machine with a fixed or tilting table (bed) or tilting frame (see figures 1, 7 and 8)

3.1.7

log band saw

a band sawing machine designed for the primary conversion of logs

3.1.7.1

travelling table log saw

a hand fed or power fed log band saw fitted with a travelling table and dogging (see figure 3)

3.1.7.2

reciprocating carriage log saw

a power fed log band saw fitted with a reciprocating carriage and dogging (see figure 4)

3.1.7.3

conveyor fed log saw

a log band saw fitted with a conveyor as an integrated feed device (see figure 5)

3.1.7.4

moving head rig log saw (gantry log saw)

a log band saw with a moving saw unit (see figure 6)

3.1.8

band re-saw

a band sawing machine with integrated feed used for secondary conversion of solid wood (see figures 2, 9, 10, 27 and 29)

3.1.9

manual control

a situation where each process movement is initiated by the operator

3.1.10

machine actuator

a power mechanism used to effect motion of the machine

3.1.11

hand feed

the manual holding and/or guiding of the workpiece. Hand feed includes the use of a hand operated carriage on which the workpiece is placed manually or clamped and the use of a demountable power feed unit

3.1.12

demountable power feed unit

a feed mechanism which is mounted on a hand fed machine so that it can be moved from its working position without the use of a spanner or similar additional device

3.1.13

integrated feed

a 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

3.1.14

run-up time

the elapsed time from the actuation of the start control device until the driven band wheel reaches the intended speed

3.1.15

run-down time

the elapsed time from the actuation of the stop control device until driven band wheel standstill

3.1.16

manual loading of power fed machines

where the workpiece is presented by the operator directly to the machine integrated feed, e.g. rotating feed rollers, travelling table or reciprocating carriage; i.e. for which there is no intermediate loading device to receive and transfer the workpiece from the operator to the integrated feed

3.1.17

manual unloading of power fed machines

where the workpiece is removed by the operator directly from the machine outfeed; i.e. for which there is no intermediate unloading device to receive and transfer the workpiece from the machine outfeed to the operator

**3.1.18
cutting area**

The area where the saw blade can be involved in the cutting process

**3.1.19
non-cutting area**

the area where the saw blade is not involved in the cutting process

3.1.20

A1 displaceable machine A1

a machine which is located on the floor, stationary during use and equipped with a device, normally wheels, which allows it to be moved between locations

3.1.21

stationary machine

a machine designed to be located on or fixed to the floor or other parts of the structure of the premises and to be stationary during use

3.1.22

A1 information from the supplier A1

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

3.2 Terminology

The names of the main parts of the machines are shown in figures and Tables 1 to 6.

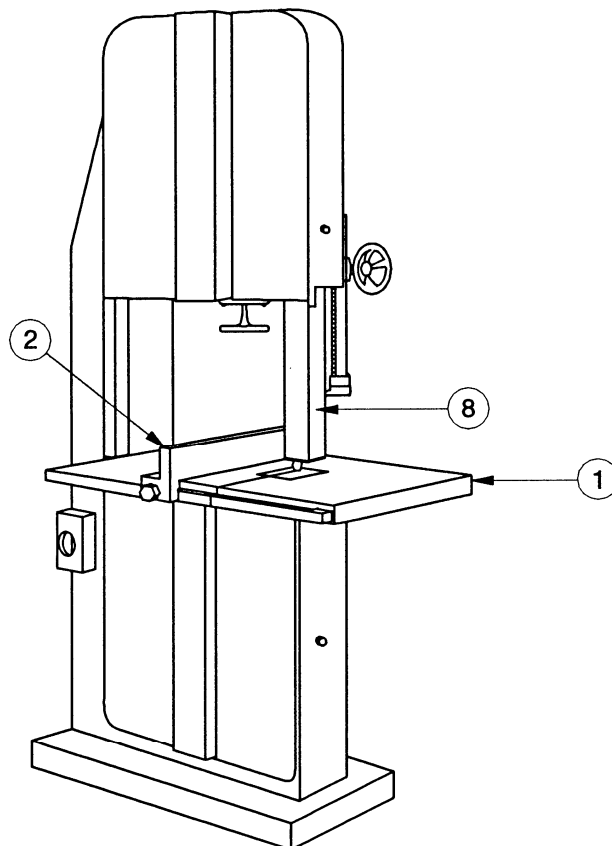


Figure 1 a) — Guards closed

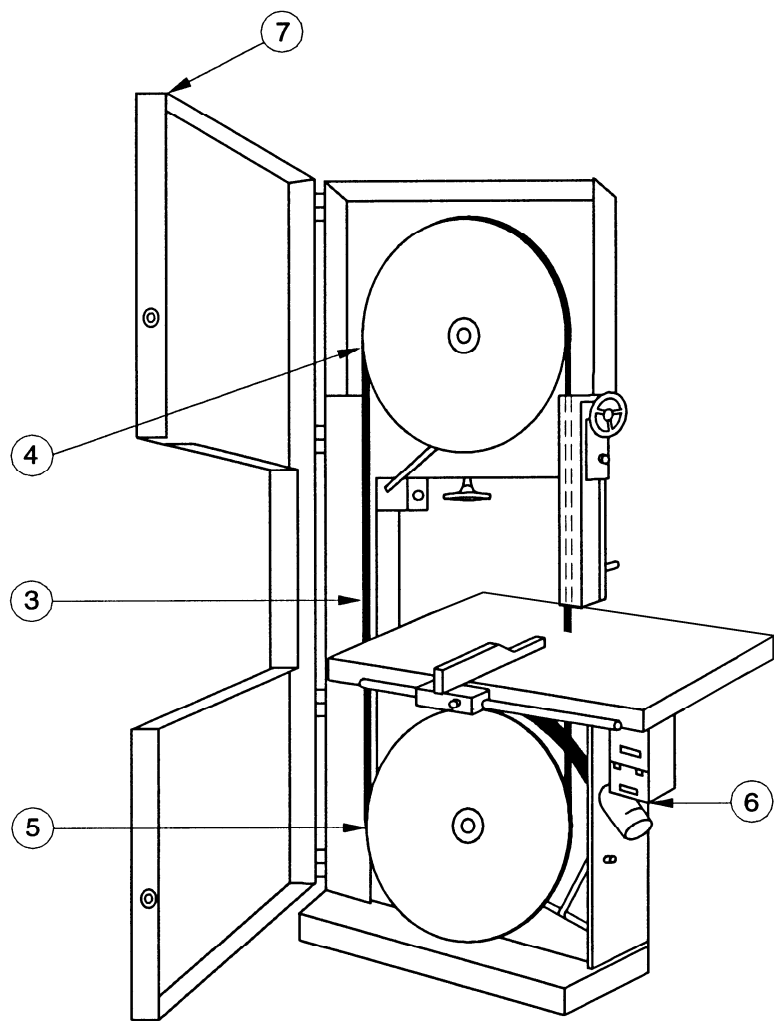


Figure 1b) — Guards open

Figure 1 — Hand fed table band saw

Table 1 — Terminology for table band saw

1	Table
2	Adjustable fence
3	Bandsaw blade
4	Top band wheel
5	Bottom band wheel
6	Start and stop controls
7	Band wheel guard
8	Adjustable guard for saw blade
[A1] deleted text [A1]	

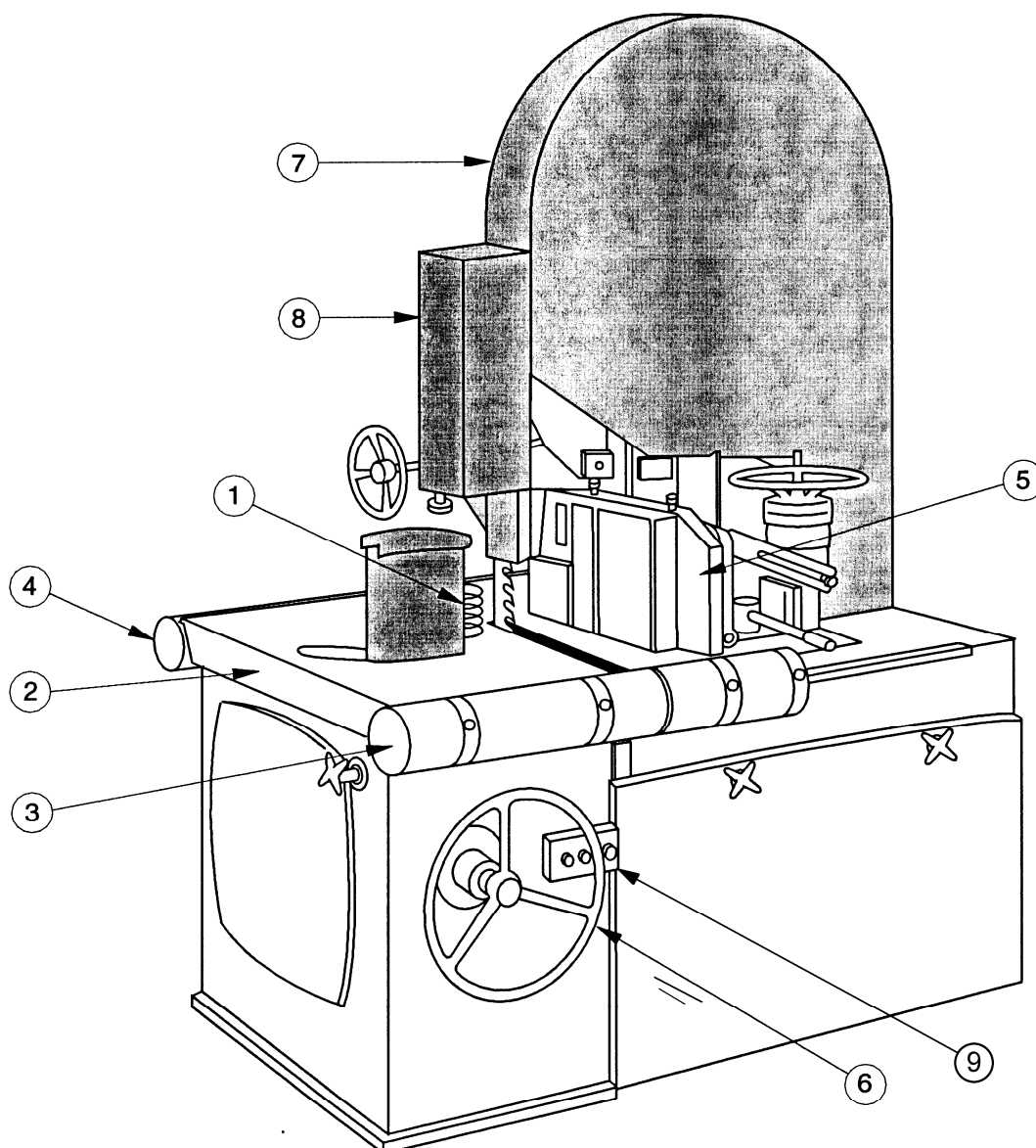


Figure 2 — Band re-saw

Table 2 — Terminology for band re-saw

1	Feed roller
2	Workpiece support (table)
3	Infeed table roller
4	Outfeed table roller
5	Fence
6	Handwheel for adjustment of feed rollers
7	Band wheel guard
8	Adjustable guard for saw blade
A1 9	Start and stop controls A1

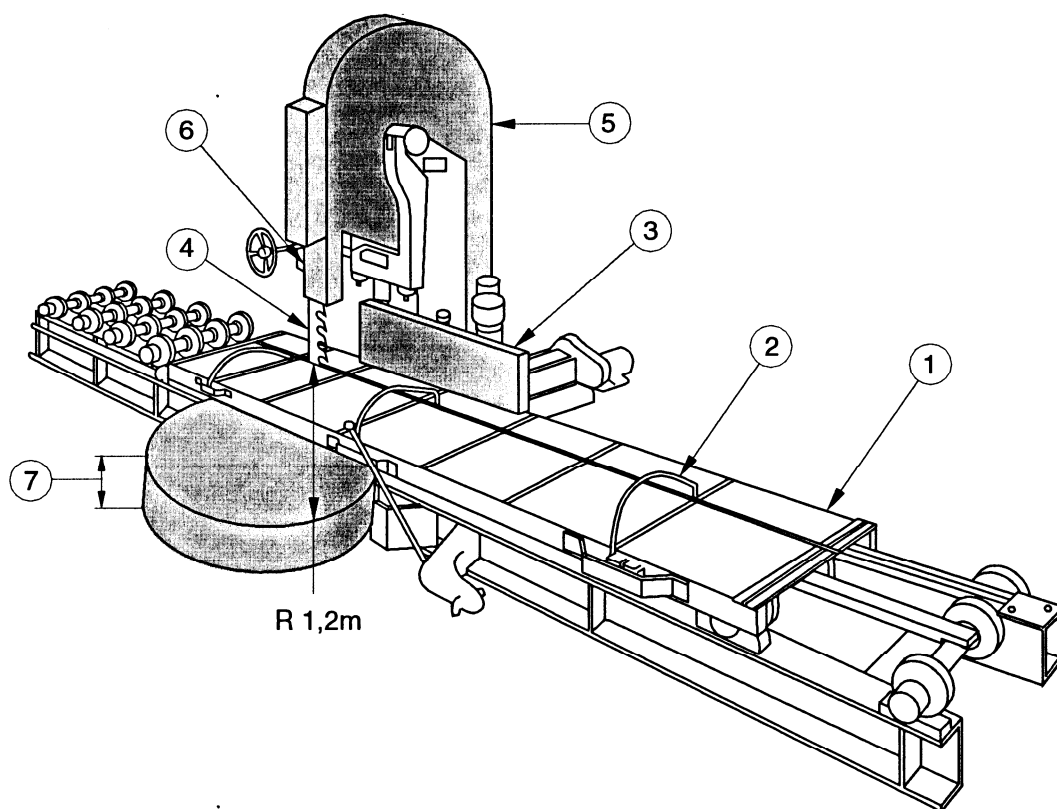


Figure 3 — Travelling table log saw

Table 3 — Terminology for travelling table log saw

1	Travelling table
2	Dogging
3	Fence
4	Saw blade
5	Band wheel guards
6	Adjustable guard for saw blade
7	Below travelling table height by not more than 100 mm

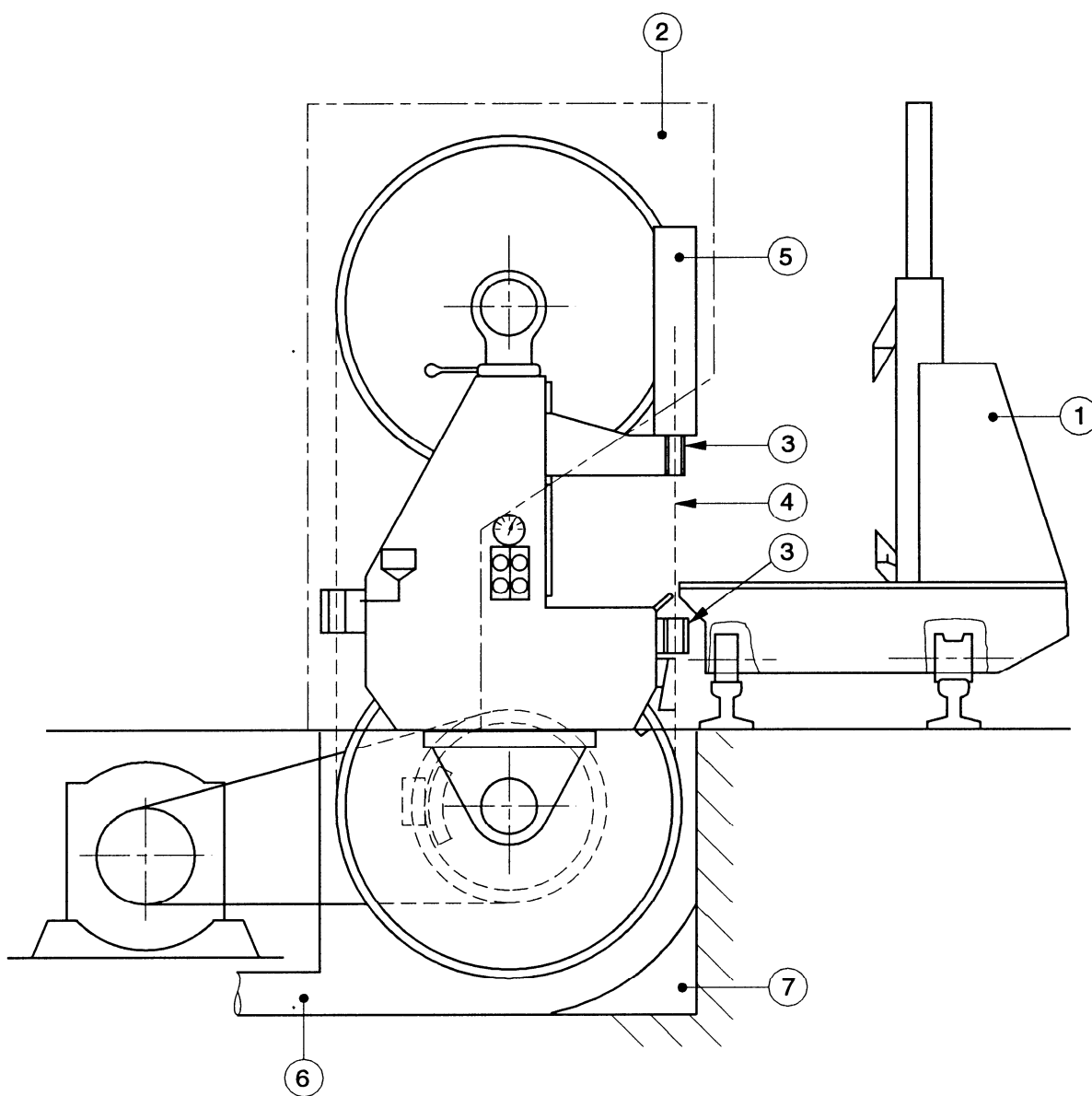


Figure 4 — Reciprocating carriage log saw

Table 4 — Terminology for reciprocating carriage log saw

1	Reciprocating log carriage
2	Band wheel guard
3	Saw guides
4.	Saw blade
5	Adjustable guard for saw blade
6	Dust extraction outlet
7	Pit

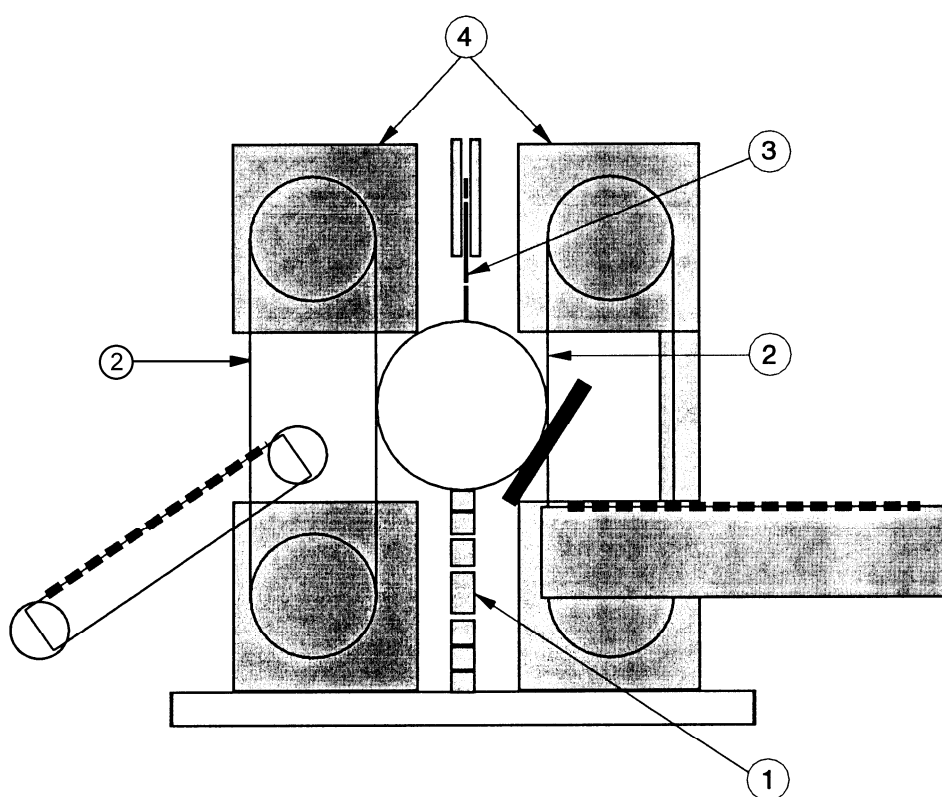


Figure 5 — Conveyor fed log saw

Table 5 — Terminology for conveyor fed log saw

1	Conveyor
2	Saw blades
3	Spiked idle roller
4	Band wheel guards

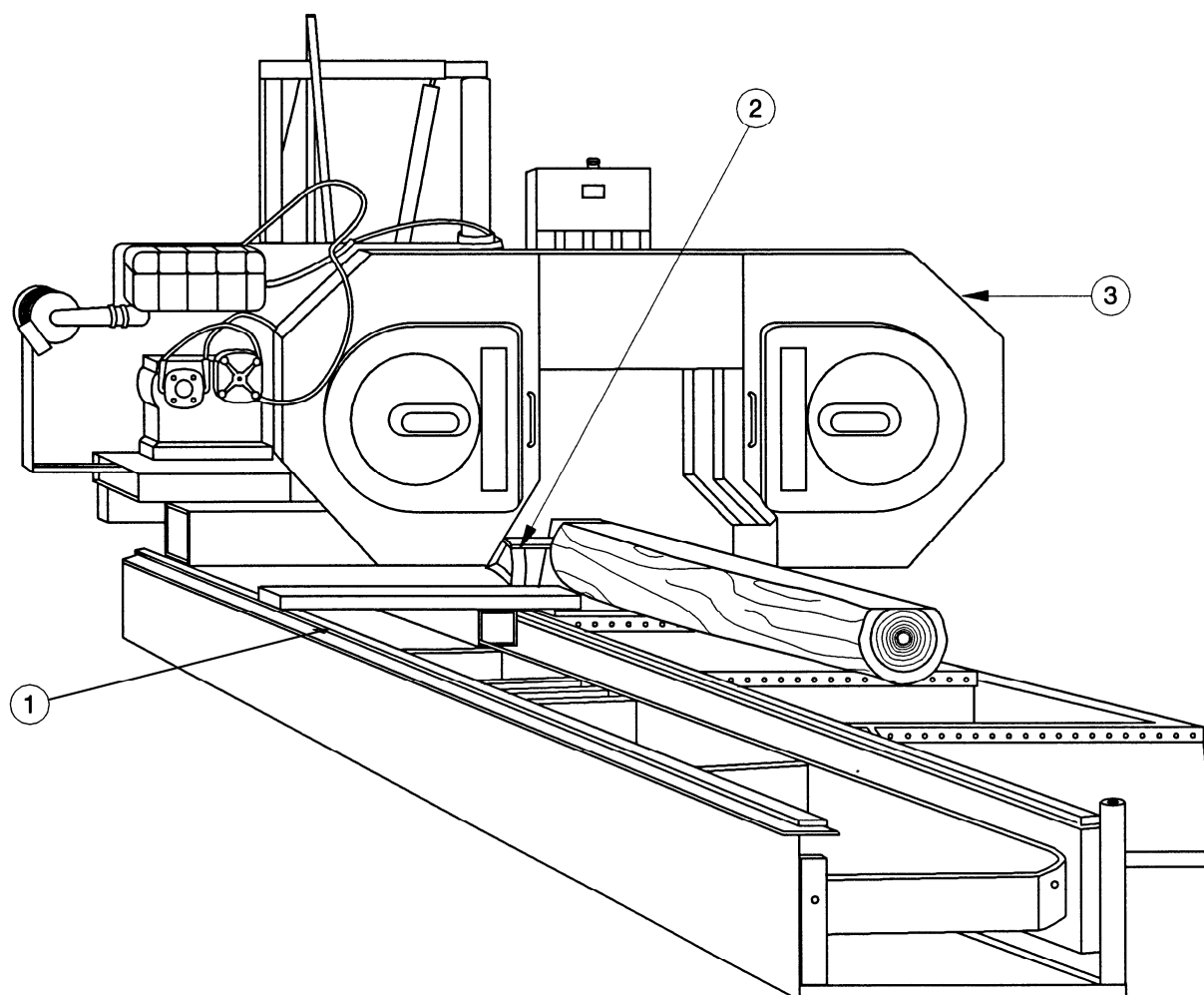


Figure 6 — Moving head rig log saw

Table 6 — Terminology for moving head rig log saw

1	Moving head rig
2	Saw blade
3	Band wheel guard

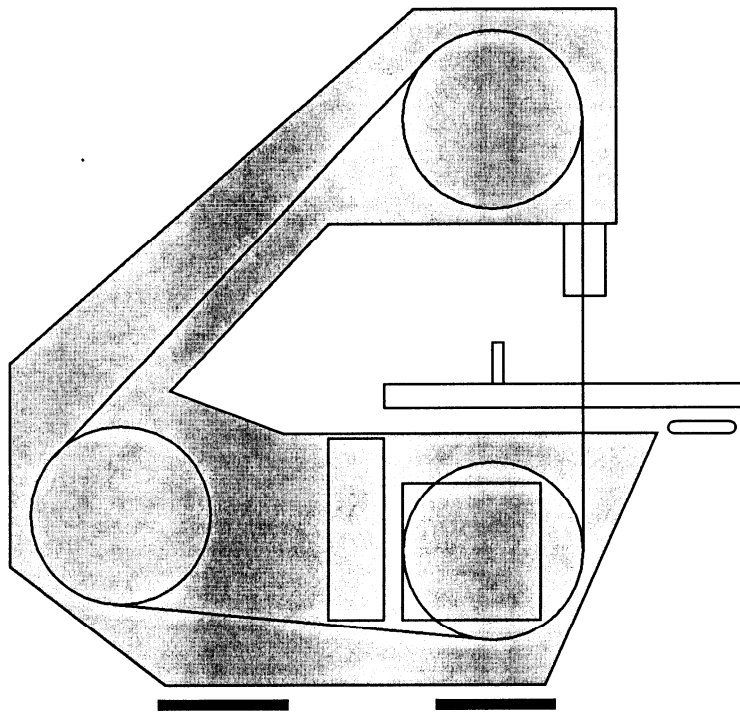


Figure 7 — Hand fed table band saw with three band wheels

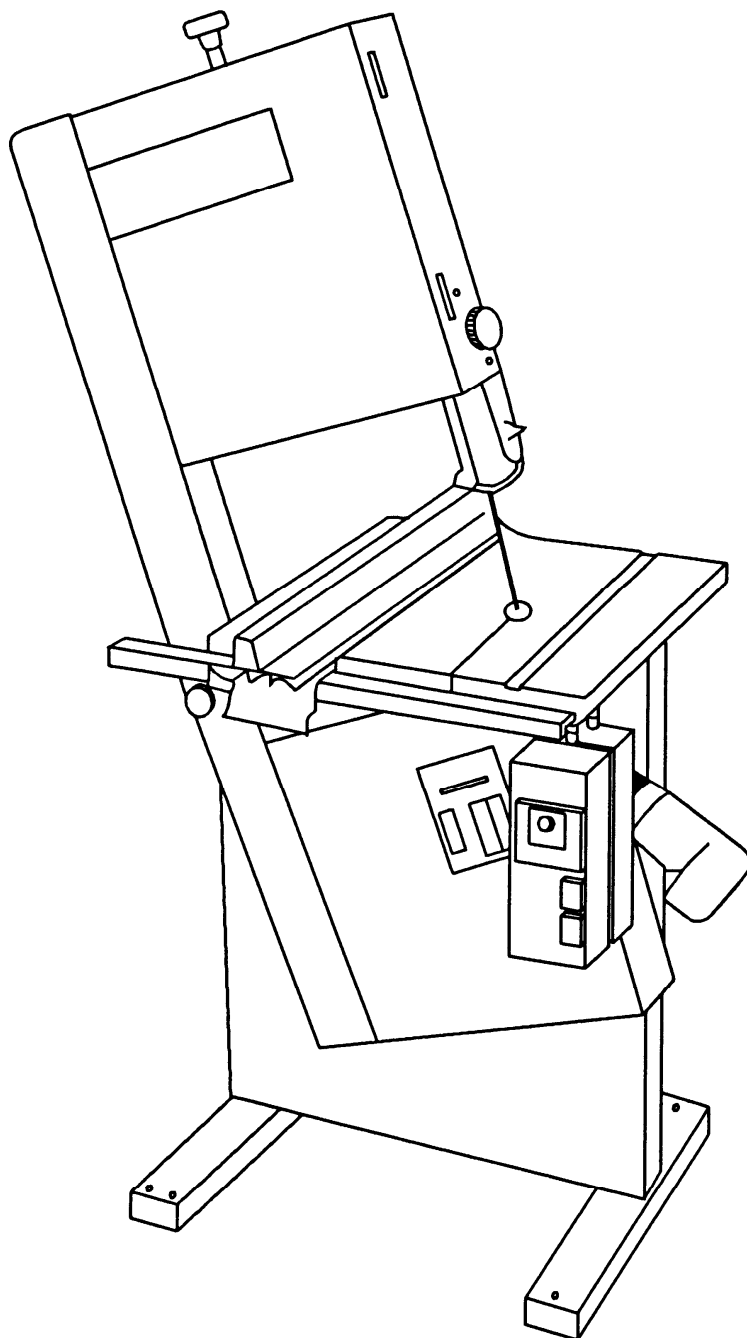


Figure 8 — Hand fed table band saw (tilting saw unit)

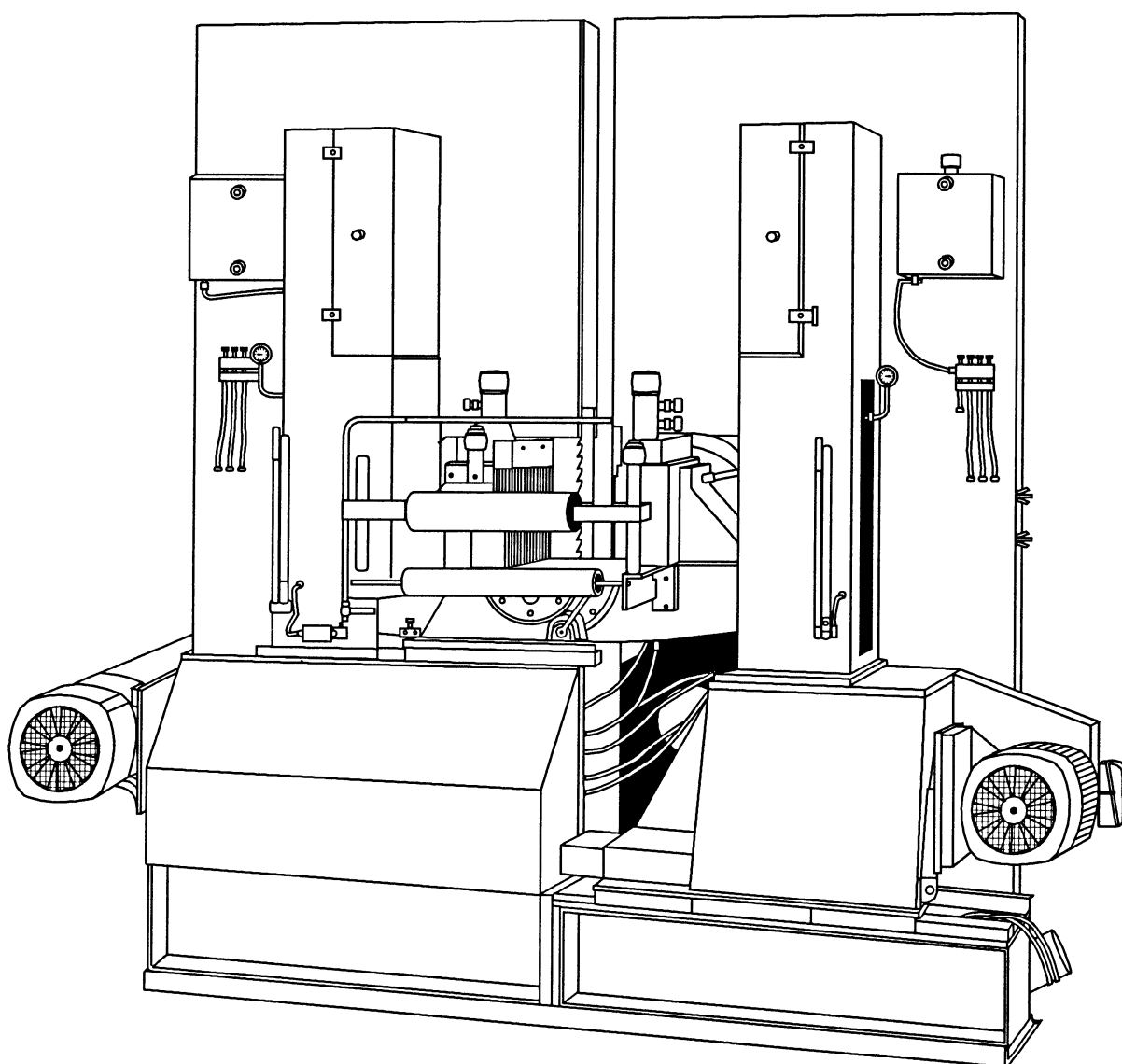


Figure 9 — Twin opposed band re-saws

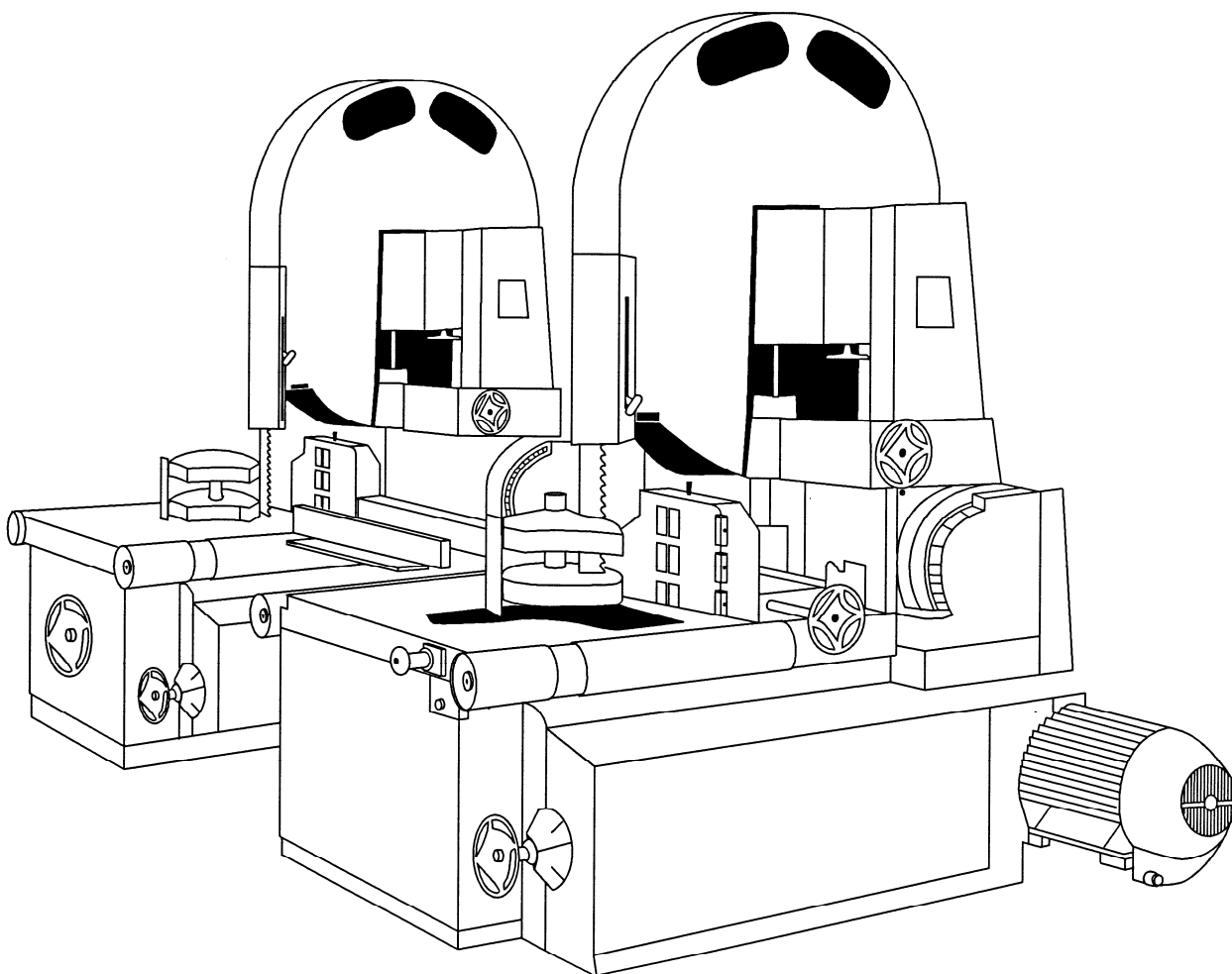


Figure 10 —Twin band re-saws in tandem

4 List of significant hazards

 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 7 — List of significant hazards

No	Hazards, hazardous situations and hazardous events	EN ISO 12100		Relevant sub-clause of this document
		Part 1: 2003	Part 2: 2003	
1	Mechanical hazards related to: - machine parts or work-pieces:			
	a) shape;	4.2	4.2.1, 4.2.2, 5	5.2.2, 5.2.3.1, 5.2.6, 5.2.7.1.2, 5.2.7.2, 5.2.7.3, 5.2.8
	b) relative location;			5.1.2, 5.1.4, 5.2.3.1, 5.2.3.2, 5.2.7.1.2, 5.2.7.4, 5.2.8, 5.2.9
	c) mass and stability (potential energy of elements which may move under the effect of gravity);			5.2.5
	d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion);			5.2.1, 5.2.7.1.2, 5.2.7.3
	e) mechanical strength.			5.2.2.1, 5.2.6.2
	- accumulation of energy inside the machinery:			
f) elastic elements (springs), or	4.2	4.10, 5.5.4	5.2.6	
	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		5.2.9
1.2	Shearing hazard			5.2.8, 5.2.9
1.3	Cutting or severing hazard			5.2.7
1.4	Entanglement hazard			5.2.7, 5.2.8
1.5	Drawing-in or trapping hazard			5.2.7, 5.2.8, 5.2.9
1.6	Impact hazard			5.2.7
1.7	Stabbing or puncture hazard			5.2.2
1.9	High pressure fluid injection or ejection hazard			5.3.7, 5.3.8

Table 1 – (continued)

2	Electrical hazards 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
4	Hazards generated by noise, resulting in:			
4.1	Hearing loss (deafness), other physiological disorders (loss of balance, loss of awareness)	4.5	4.2.2, 5	5.3.2
6	Hazards generated by radiation			
6.5	Lasers	4.7		5.3.12
7	Hazards generated by materials and substances (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	4.3b, 4.4	5.3.3
7.2	Fire hazard	4.8	4.4	5.3.1
8	Hazards generated by neglecting ergonomic principles in machinery design related to:			
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
8.2	Hand-arm or foot-leg anatomy	4.9	4.8.3	5.1.2
8.4	Local lighting		4.8.6	6.3
8.6	Human error, human behaviour		4.8, 4.11.8, 4.11.10, 5.5.2, 6	6.3
8.7	Design, location or identification of manual controls		4.8.7, 4.11.8	5.1.2
8.8	Design or location of visual display units		4.8.8, 6.2	5.1.2
10	Unexpected start up, unexpected overrun/overspeed (or any similar malfunction) from:			
10.1	Failure/disorder of the control system	4.9	4.11, 5.5.4	5.1.1
10.2	Restoration of energy supply after an interruption		4.11.4	5.1.1, 5.1.9
10.3	External influences on electrical equipment		4.11.11	5.1.1
10.6	Errors made by the operator (due to mismatch of machinery with human characteristics and abilities, see 8.6)		4.8, 4.11.8, 4.11.10, 5.5.2, 6	5.1.1, 5.3.5, 6.3
11	Impossibility of stopping the machine in the best possible conditions		4.11.1, 4.11.3, 5.5.2	5.1.2, 5.1.4, 5.2
13	Failure of the power supply		4.11.1, 4.11.4	5.1.9

Table 1 – (continued)

14	Failure of the control circuit		4.11, 5.5.4	5.1.1
15	Errors of fitting	4.9	4.7, 6.5	5.1.8
16	Break-up during operation	4.2.2	4.3	5.2.2
17	Falling or ejected objects or fluids	4.2.2	4.3, 4.10	5.2.2, 5.2.3, 5.2.9
18	Loss of stability / overturning of machinery	4.2.2	5.2.6	5.2.1

Ⓐ

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 purposes of this standard a safety related control system is one from and including the initial manual control or position detector or sensor up to and including the power control element of the final machine actuator, e.g. motor or brake. Ⓐ The safety related control systems of this machine are those for:

- starting the drive motor for the driven band wheel (see 5.1.3);
- starting the integrated feed (see 5.1.3 and 5.1.3.1);
- normal stopping (see 5.1.4.1 and 5.1.4.2);
- emergency stopping (if required) (see 5.1.5);
- stopping powered feed rollers (see 5.1.2.1 and 5.1.5);
- interlocking (see 5.2.7.1.1, 5.2.7.2.1, 5.2.7.3.1, 5.2.7.3.2, 5.2.7.4 and 5.2.8);
- interlocking with guard locking (see 5.2.7.1.1, 5.2.7.2.1, 5.2.7.3.1 and 5.2.8);
- mode selection (if required) (see 5.1.6);
- opening/closing the adjustable saw blade guard during movement of the reciprocating carriage, moving head rig, conveyor feed or travelling table (see 5.2.7.3.2.1);
- trip devices (where fitted) (see 5.2.7.2.5);
- activation of the compensation device (see 5.2.3.1);
- initiation of the braking system (see 5.2.4);
- brake release (see 5.1.6);
- pressure sensitive devices (where fitted) (see 5.2.7.2.4);

— opto-electronic devices (where fitted) (see 5.2.7.2.4).

These control systems shall be designed and constructed using “well tried components and principles”. For the purpose of this standard “well tried components and principles” means:

a) electrical components if they comply with relevant standards including:

-  EN 60947-5-1:2004  (section 3) for control switches with positive opening operation used as mechanically actuated position detectors for interlocking of guards and for relays used in auxiliary circuits;
-  EN 60947-4-1:2001  for electromechanical contactors and motor-starters used in mains circuits;
-  HD 22.1 S4:2002  for rubber insulated cables;
-  HD 21.1 S4:2002  for polyvinyl chloride cables if these cables are additionally protected against mechanical damage by positioning (e.g. inside frames).

b) electrical principles if the controls comply with the first four measures listed in 9.4.2.1 of  EN 60204-1:2006 . The circuits shall be 'hardwired'. If electronic components are used in safety related control systems Category 1 is fulfilled if they are in accordance with 9.4.2.2 or 9.4.2.3 of  EN 60204-1:2006 .

c) mechanical components if they comply with  4.5 of EN ISO 12100-2:2003 .

d) mechanically actuated position detectors for guards if they are actuated in the positive mode and their arrangement/fastening and their cam design/mounting are in accordance with 5.2 and 5.3 of EN 1088:1995;

e) interlocking devices with guard locking if they are in accordance with conditional unlocking in Table 1 of EN 1088:1995;

f) hydraulic and pneumatic components and systems if they are in accordance with EN 982:1996 and EN 983:1996 respectively;

g) opto-electronic devices, if they comply with type 2 of  CLC/TS 61496-2  and if they are tested together with the associated control circuits at least at each starting of the machine.

Verification: By checking the relevant drawings and/or circuit diagrams and inspection of the machine.
 ~~deleted text~~ .

 NOTE For components characteristics the information from the component supplier can be useful. 

5.1.2 Position of controls

5.1.2.1 Log band saws

Controls required for the normal processing operation of log band saws shall either:

a) be positioned at least 1,2 m from the cutting area as shown in figure 11;

or

b) be separated from the cutting area by a deterring/impeding device which creates a reach distance of 1,2 m to the saw blade.

Setting controls which are not required during the normal processing operation may be positioned within 1,2 m of the cutting area.

Control devices shall not be located in the path of the reciprocating carriage, conveyor feed, moving head rig, travelling table, other handling equipment or logs.

In all cases, the operator shall, from the normal operating position, be able to see the exposed part of the saw blade and the entire path of the reciprocating carriage or other relevant movement, unless the machine is located within perimeter fencing or the controls are sited in a separate control cabin.

Verification: By checking the relevant drawings and/or circuit diagrams, measurement, visual inspection and functional testing of the machine.

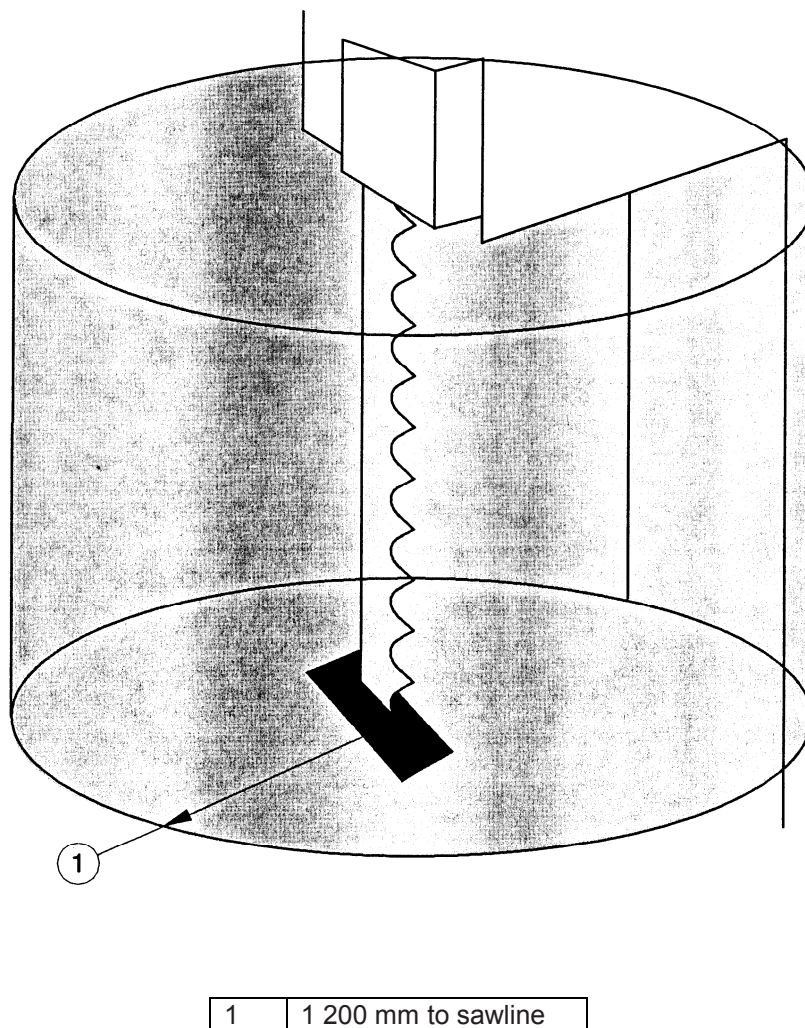


Figure 11 — Log saws - Danger area around the blade

5.1.2.2 Table band saws

On table band saws electrical controls including the emergency stop control (if fitted) shall be positioned:

- a) on the infeed side;
- b) between 600 mm and 1 400 mm from floor level;

and

- c) either on a fixed part of the machine as shown in the shaded area in figure 12 or on a moveable control panel or a free-standing control console.

Verification: By checking the relevant drawings and/or circuit diagrams, measurement, visual inspection and functional testing of the machine.

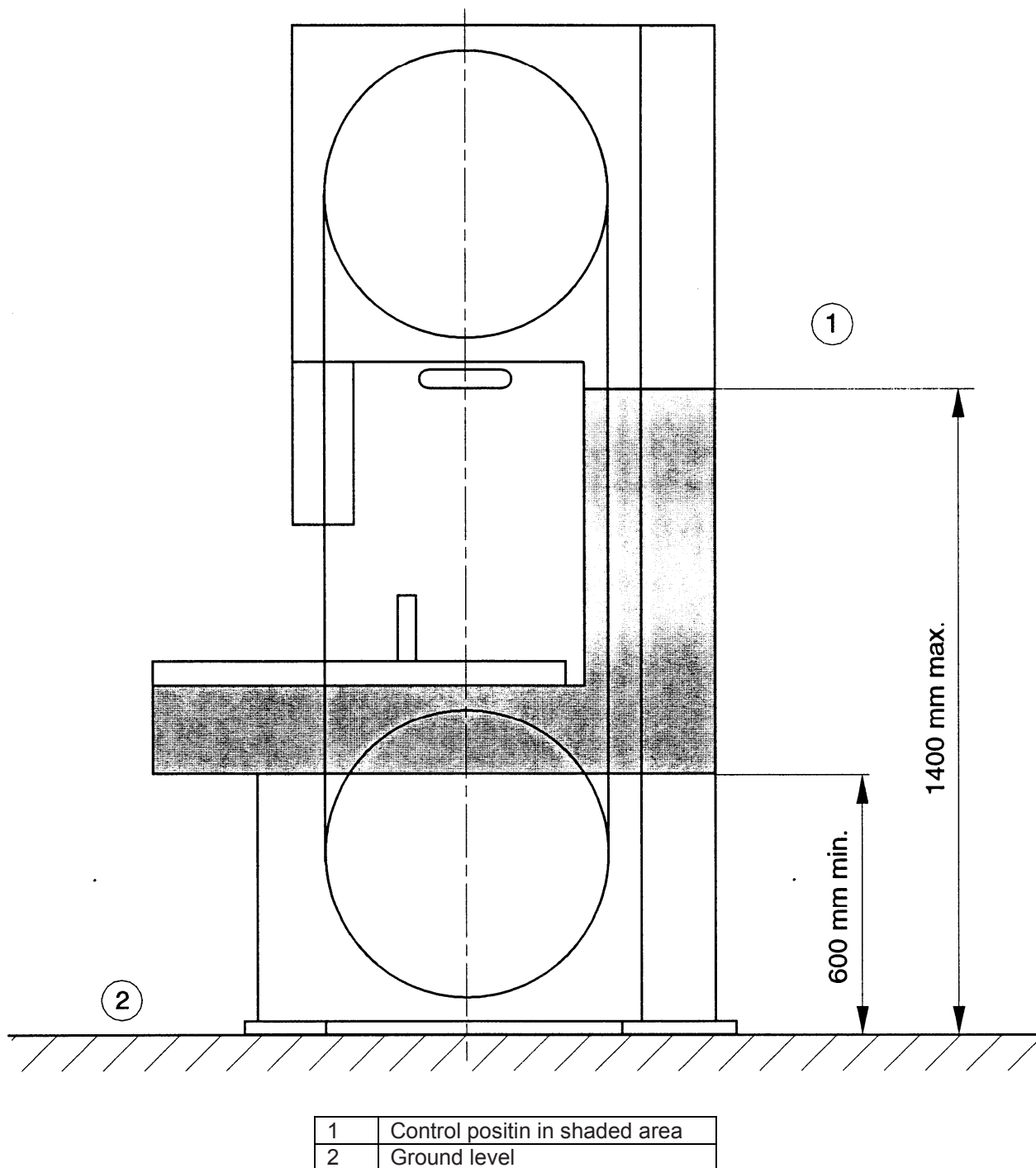


Figure 12 — Table band saws and re-saws - Position of controls

5.1.2.3 Re-saws

On re-saws, electrical controls, except the emergency stop control, shall be positioned in accordance with 5.1.2.2. An emergency stop control shall be positioned at any infeed and outfeed position and on any fixed or moveable control panel.

Verification: By checking the relevant drawings and/or circuit diagrams, measurement, visual inspection and functional testing of the machine.

5.1.3 Starting

See 9.2.5.2 of  EN 60204-1:2006 .

For the purposes of this standard "...all of the safeguards in place and functional..." is achieved by the interlocking arrangements described in 5.2.7.1.1 and "operation" means rotation of the driven band wheel and powered movement of the integrated feed. The exceptions described in 9.2.5.2 of  EN 60204-1:2006  are not relevant.

The drive motor for the driven band wheel shall only become operable after any interlocked guards are in place and functional.

Movement of integrated feed or demountable power feed as applicable, shall only become operable after the drive motor for the driven band wheel has been started.

Verification: By checking the relevant drawings and/or circuit diagrams, inspection and relevant functional testing of the machine.

5.1.3.1 Log band saws

At log band saws under manual control, the controls for integrated feed movement shall be of the 'hold-to-run' type unless the machine is located within an interlocked perimeter fence.

At log band saws under manual control the controls which operate the log turning devices shall be of the hold-to-run type unless the log turning device is enclosed in an interlocked perimeter fence.

Verification: By checking the relevant drawings and/or circuit diagrams, inspection and relevant functional testing of the machine.

5.1.3.2 Table band saws

For table band saws fitted with a demountable power feed by a manufacturer, a separate start control shall be provided at the demountable power feed.

Verification: By checking the relevant drawings and/or circuit diagrams, inspection and relevant functional testing of the machine.

5.1.4 Normal stopping

5.1.4.1 All machines

A stop control shall be fitted and located at the main control position, except where an emergency stop control which performs the same function is fitted. The control, when operated, shall disconnect power from all the machine actuators and actuate the brake (if provided).

The normal stop control system shall be either:

- a) category 1 in accordance with 9.2.2 of  EN 60204-1:2006  where the machine is fitted with an electrical brake;

or

- b) category 0 in accordance with 9.2.2 of  EN 60204-1:2006  in other cases.

Where a Category 1 stop control is fitted, the stopping sequence shall be:

- cut power to all machine actuators except workpiece clamping (if fitted) and actuate the brake;
- cut power to brake after braking sequence is complete.

If a time delay device is used, the time delay shall be at least the braked run-down time and either, the time delay shall be fixed or the time delay adjustment device shall be sealed.

Verification: By checking relevant drawings and/or circuit diagrams, inspection and relevant functional testing of the machine.

5.1.4.2 Table band saws with demountable power feed

For table band saws fitted with a demountable power feed or an electrical connection for a demountable power feed, an additional stop control to that required by 5.1.4.1 shall be provided for the power feed, located at the main control position.

Verification: By checking the relevant drawings and/or circuit diagrams, inspection and relevant functional testing of the machine.

5.1.5 Emergency stop

See  EN ISO 13850:2008 .

An emergency stop control shall be fitted on all machines, except table band saws which do not have an electrical connection for a demountable power feed.

If the machine is fitted with a mechanical brake, the emergency stop control system shall be a Category 0 stop in accordance with 9.2.2 of  EN 60204-1:2006 .

In all other cases, the emergency stop control system shall be a Category 1 stop in accordance with  EN 60204-1:2006 .

Dangerous movements caused by gravity, pressure etc. shall be avoided, e.g. by automatic mechanical blocking or clamping devices.

Where a Category 1 stop is fitted, the stopping sequence shall be as in 5.1.4.

Verification: By checking the relevant drawings and/or circuit diagrams, measurement, inspection and relevant functional testing of the machine.

5.1.6 Tracking mode

On machines where the band wheels are < 1,2 m in diameter and where the brake is held on while power is off and the wheels are rotated by hand for tracking, provision shall be made for releasing the brake for tracking. It shall not be possible to release the brake until the band wheels are stationary.

On machines where the band wheels are ≥ 1,2 m in diameter, where unbraked run-down is required during tracking, a mode selector shall be provided. The conditions in 5.2.4.3 shall be met in full.