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**Woodworking machines — Safety —**  
**Part 2:**  
**Horizontal beam panel circular sawing**  
**machines**

*Machines à bois — Sécurité —*

*Partie 2: Scies circulaires à panneaux horizontales à presseur*  
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ISO 19085-2:2017

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

The committee responsible for this document is ISO/TC 39, *Machine tools*, Subcommittee SC 4, *Woodworking machines*.

This document is intended to be used in conjunction with ISO 19085-1:2017, which gives requirements common to different machine types.

A list of all parts in the ISO 19085 series can be found on the ISO website.

This corrected version of ISO 19085-2:2017 incorporates the following corrections:

- [Figures 5](#) and [9](#) have been changed.

## Introduction

The ISO 19085 series of International Standards provides technical safety requirements for the design and construction of woodworking machinery. It concerns designers, manufacturers, suppliers and importers of the machines specified in the Scope. It also includes a list of informative items that the manufacturer will need to give to the user.

This document is a type-C standard as stated in ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document.

When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

The full set of requirements for a particular type of woodworking machine are those given in the part of ISO 19085 applicable to that type, together with the relevant requirements from ISO 19085-1:2017, to the extent specified in the Scope of the applicable part of ISO 19085.

As far as possible, in parts of ISO 19085 other than ISO 19085-1:2017, safety requirements are referenced to the relevant sections of ISO 19085-1:2017, to avoid repetition and reduce their length. The other parts contain replacements and additions to the common requirements given in ISO 19085-1:2017.

Thus, [Clauses 5, 6, 7](#) and [8](#), with their subclauses and the annexes of this document can either

— confirm as a whole,

— confirm with additions,

— exclude in total, or

— replace with specific text

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the corresponding subclauses or annexes of ISO 19085-1:2017.

This interrelation is indicated in the first paragraph of each subclause or annex right after the title by one of the following statements:

— “This subclause of ISO 19085-1:2017 applies”;

— “This subclause of ISO 19085-1:2017 applies with the following additions”, or “This subclause of ISO 19085-1:2017 applies with the following additions, subdivided into further specific subclauses.”;

— “This subclause of ISO 19085-1:2017 does not apply.”;

— “This subclause of ISO 19085-1:2017 is replaced by the following text.”, or “This subclause of ISO 19085-1:2017 is replaced by the following text, subdivided into further specific subclauses.”.

Specific subclauses and annexes in this part of ISO 19085 without correspondent in ISO 19085-1:2017 are indicated by the introductory sentence: “Subclause (or annex) specific to this part of ISO 19085.”

[Clauses 1, 2, 4](#) replace the correspondent clauses of ISO 19085-1:2017, with no need for indication since they are specific to each part of the series.

NOTE Requirements for tools are given in EN 847-1:2013 and EN 847-2:2013.

# Woodworking machines — Safety —

## Part 2:

## Horizontal beam panel circular sawing machines

### 1 Scope

This document gives the safety requirements and measures for horizontal beam panel circular sawing machines with the saw carriage of the front cutting line mounted below the work-piece support, which are manually and/or powered loaded and manually unloaded, hereinafter referred to as “machines”.

It deals with all significant hazards, hazardous situations and events as listed in [Clause 4](#), relevant to the machines, when operated, adjusted and maintained as intended and under the conditions foreseen by the manufacturer including reasonably foreseeable misuse. Also, transport, assembly, dismantling, disabling and scrapping phases have been taken into account.

NOTE For relevant but not significant hazards, e.g. sharp edges of the machine frame, see ISO 12100:2010.

It is also applicable to machines fitted with one or more of the following devices/additional working units, whose hazards have been dealt with:

- side pressure device;
- device for powered unloading;
- unit for scoring;
- unit for post-formed/soft-formed edge pre-cutting;
- panel turning device;
- front side turn table;
- pushing out device;
- pneumatic clamping of the saw blade;
- powered panel loading device;
- device for grooving by milling tool;
- one or more additional cutting lines inside the machine for longitudinal and/or head cut (before the transversal cutting line);
- work-piece vacuum clamping as part of a front side turn table or of a panel loading device.

The machines are designed for cutting panels consisting of

- a) solid wood,
- b) material with similar physical characteristics to wood (see ISO 19085-1:2017, 3.2),
- c) gypsum boards, gypsum bounded fibreboards,
- d) composite boards made from the materials listed above, and
- e) composite materials with core consisting of e.g. polyurethane or mineral material laminated with light alloy.

This document does not deal with hazards related to

- specific features that differ from the dashed list above,
- the machining of panels with milling tools for grooving,
- powered unloading of panels,
- rear half of split pressure beam on the front cutting line,
- the combination of a single machine being used with any other machine (as part of a line).

It is not applicable to machines intended for use in potentially explosive atmospheres or to machines manufactured prior to the date of its publication.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

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

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

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

ISO 14118:2000, *Safety of machinery — Prevention of unexpected start-up*

ISO 19085-1:2017, *Woodworking machines — Safety — Part-1: common requirements*

EN 847-1:2013, *Tools for woodworking — Safety requirements — Part 1: Milling tools, circular saw blades*

IEC 60204-1:2005, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010, ISO 13849-1:2015, ISO 19085-1:2017 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

**3.1 horizontal beam panel sawing machine**  
machine, designed for cutting panels, fitted with one travelling *saw carriage* (3.6) per cutting line incorporating one or more circular saw blades

Note 1 to entry: The work-piece is supported in the horizontal plane and may be mechanically positioned by a panel pusher for the cuts and held in position during cutting by a pressure beam. The cutting stroke is power driven. Before the cutting stroke commences, the saw blade is automatically raised/lowered and is retracted or out of operation for the return stroke. The cut takes place only in a single straight line. For examples, see [Figure 1](#). The work-piece is loaded manually and/or by means of a powered panel loading device and manually unloaded. The machine may have any of the devices/additional working units listed in the scope.



### 3.2 manual loading

operation where the operator puts the work-piece directly on the work-piece support from the front side of the machine, i.e. there is no intermediate loading device, which keeps the operator away from the machine front cutting line of at least 1 500 mm during operation

### 3.3 manual unloading

operation where the operator removes the work-piece directly from the work-piece support, i.e. there is no intermediate unloading device, which keeps the operator away from the machine front cutting line of at least 1 500 mm during operation

### 3.4 powered loading

operation where the work-pieces are put on the work-piece support mechanically and power driven, by e.g. a lifting unit or a loading device, normally a lifting platform

### 3.5 powered unloading

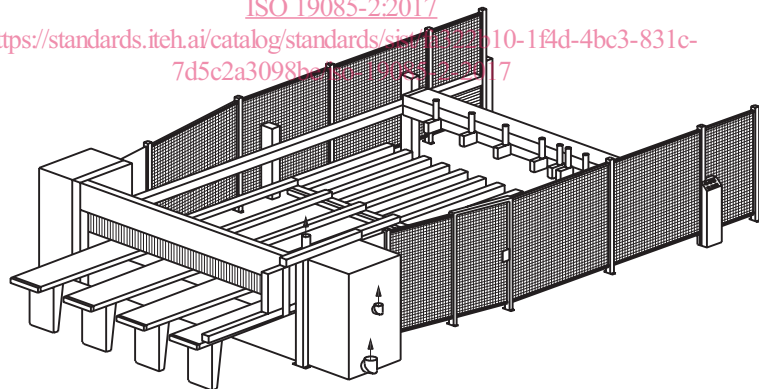
operation where the work-pieces are removed from the work-piece support mechanically and power driven, by e.g. a lifting unit or an unloading device

### 3.6 saw carriage

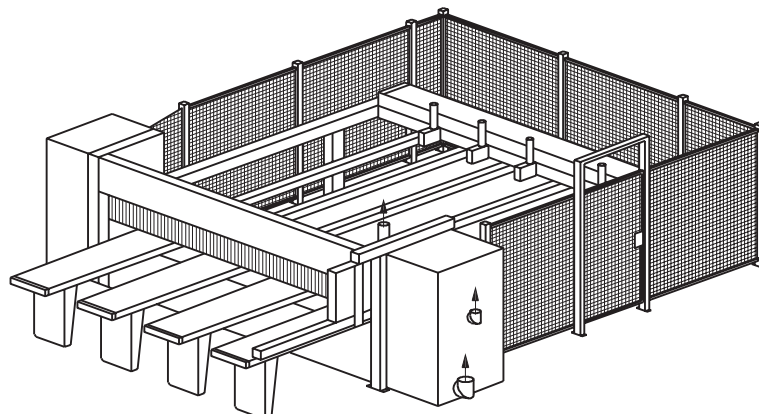
supporting unit of the saw blades, which performs the cutting stroke

### 3.7 main saw blade

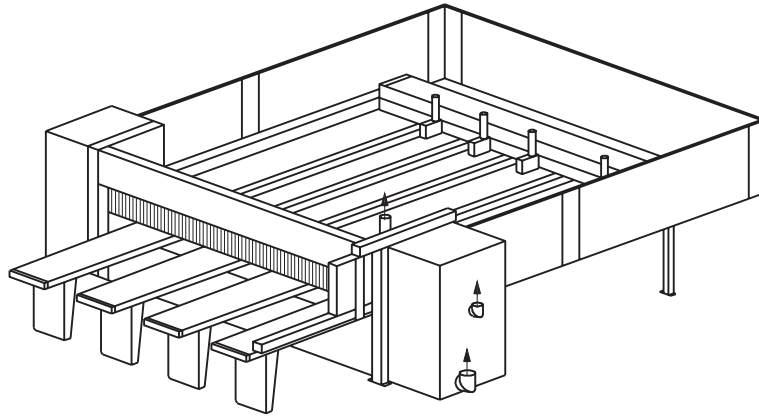
circular saw blade which is used for separating the work-piece



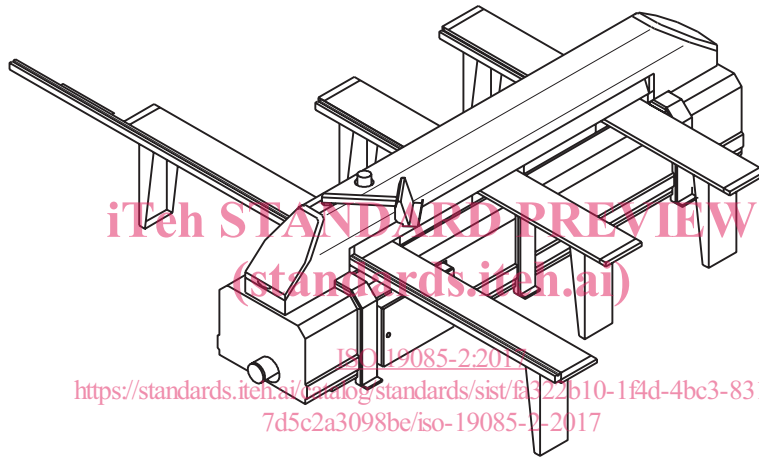
a) Example of a machine with panel loading from the rear side by a powered loading device and with perimeter fence and light barrier



**b) Example of a machine with panel loading from the front side and perimeter fence**



**c) Example of a machine with panel loading from the front and with distance guards mounted on the machine frame**



**d) Example of a machine without panel pusher**

**Figure 1 — Examples of horizontal beam panel saws**

**3.8**

**saw carriage rest position**

position in either the left or the right side of the machine body and outside of the cutting area to which the *saw carriage* (3.6) may return at the end of each *cutting cycle* (3.11)

**3.9**

**saw blade rest position**

position of the saw blade below the machine table

**3.10**

**pressure beam rest position**

highest position of the *pressure beam* (3.15)

**3.11**

**cutting cycle**

single cut operation consisting of vertical movements of the saw blades and horizontal movements of the *saw carriage* (3.6)

**3.12****front cutting line**

cutting line closest to the operator's position

Note 1 to entry: See [Figure 2](#).

**3.13****longitudinal cutting line**

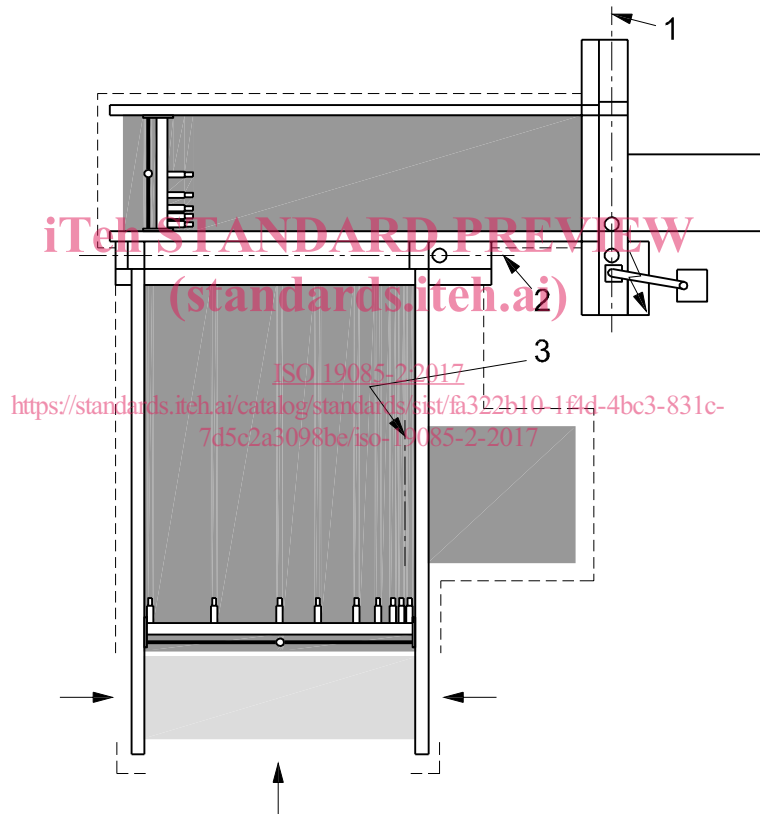
additional cutting line inside the machine

Note 1 to entry: A machine may be fitted with more longitudinal cutting lines. See [Figure 2](#).

**3.14****head cutting line**

first cutting line to divide a panel before further cuts, where the *saw carriage* ([3.6](#)) can be mounted below or above the work-piece support

Note 1 to entry: See [Figure 2](#).

**Key**

- 1 front cutting line
- 2 longitudinal cutting line
- 3 head cutting line

**Figure 2 — Horizontal beam panel saw cutting lines**

**3.15****pressure beam**

work-piece clamping device extending across the full working width of the machine with the function to hold the work-piece down to the work-piece support during cutting

Note 1 to entry: The pressure beam is also part of the safeguarding of the saw blades in the cutting area.

**3.16**

**panel pusher**

movable work-piece guiding device used to position the work-piece over the line of cut, and fitted with holding devices e.g. collets for holding the work-piece in position

Note 1 to entry: The positioning of the panel pusher may be under NC control.

**3.17**

**side pressure device**

power operated movable work-piece guiding device to push the work-piece against the fence for right-angled cuts

**3.18**

**panel turning device**

device integrated into the rear work-piece support to turn the panel for e.g. rectangular cut

**3.19**

**pushing out device**

movable device to move last residues of a panel towards the front of the *pressure beam* (3.15) for easy take off by the operator

Note 1 to entry: The same function can be achieved by telescopic collets or by collets with extended length mounted on the panel pusher.

**3.20**

**powered panel loading device**

device where the panel stack is put e.g. by a fork-lift truck or by a lifting unit either direct to a lifting platform or to a powered roller table which feeds the stack to the lifting table

Note 1 to entry: The lifting platform moves the uppermost panel or the required number of panels into a position which enables the panel pusher to bring the panels into the cutting position. The lifting platform itself can be fitted with an own panel pusher. The control circuits of the loading device are connected to the control circuits of the machine.

**3.21**

**front side turn table**

table, mostly with air cushion, able to move power-driven parallel to the cutting line and turn by 90° for ergonomic positioning of very heavy work-pieces or piles of panels

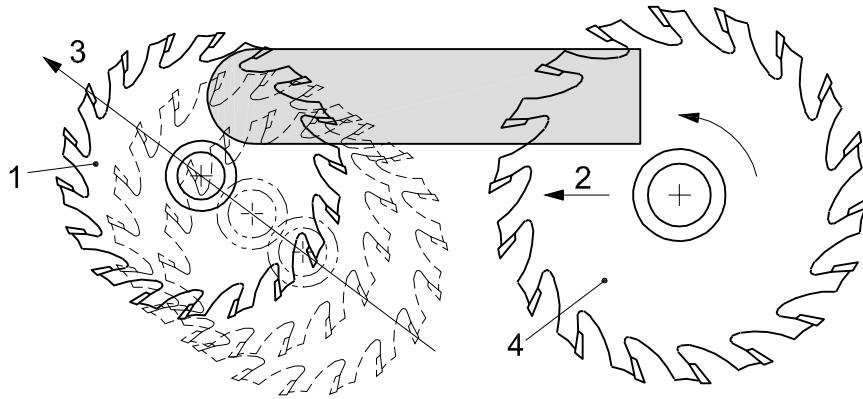
**3.22**

**post-formed edge pre-cutting**

**soft-formed edge pre-cutting**

cut made by a separate saw blade in the front profiled edge of the work-piece deep enough to prevent surface damage when the *main saw blade* (3.7) makes its cut

Note 1 to entry: See [Figure 3](#).

**Key**

- |   |  |   |                                    |
|---|--|---|------------------------------------|
| 1 | postformed/soft-formed edge pre-cutting saw blade              | 2 | feed direction of the saw carriage |
| 3 | movement of post-formed/soft-formed edge pre-cutting saw blade | 4 | main saw blade                     |

**Figure 3 — Post-formed/soft-formed edge pre-cutting**

**3.23****post-formed/soft-formed edge pre-cutting saw blade**

saw blade used for post-formed edge pre-cutting

Note 1 to entry: This may be the scoring saw blade or a separate saw blade, specifically for this purpose.

**3.24****control power-on**

control that after activation enables providing power to machines actuators, also on a lower control level, e.g. by the PLC

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**4 List of significant hazards**

This clause contains all significant hazards, hazardous situations and events (see ISO 12100), 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 measures or by reference to relevant standards. These hazards are listed in [Table 1](#).