
Woodworking machines — Safety —
Part 4:
Vertical panel circular sawing
machines

Machines à bois — Sécurité —

Partie 4: Scies circulaires à panneaux verticales
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ISO 19085-4:2018

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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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).

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).

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.

This document was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 4, *Woodworking machines*.

This document is intended to be used in conjunction with ISO 19085-1, 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.

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 to be provided to the user by the manufacturer.

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.

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 possible 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 document 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 and 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.

Woodworking machines — Safety —

Part 4: Vertical panel circular sawing machines

1 Scope

This document gives the safety requirements and measures for manually loaded and unloaded stationary vertical panel sawing machines, hereinafter referred to as “machines”.

NOTE 1 In manual loading, the operator puts the work-piece directly onto the work-piece support, with no intermediate loading device to receive and transfer the work-piece from the operator to the cutting position. In manual unloading, the operator removes the work-piece directly from the work-piece support, with no intermediate unloading device to transfer the work-piece from the cutting position to the operator.

It deals with all significant hazards, hazardous situations and events as listed in [Clause 4](#) relevant to 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 are taken into account.

NOTE 2 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:

- an integrated feed device; [ISO 19085-4:2018](https://standards.iteh.ai/catalog/standards/sist/00c5e2ee-d139-4667-84f9-fc12b702e818/iso-19085-4-2018)
- a device for scoring; <https://standards.iteh.ai/catalog/standards/sist/00c5e2ee-d139-4667-84f9-fc12b702e818/iso-19085-4-2018>
- an angle cutting device;
- a middle support device;
- programmable end stops for parallel vertical cuts;
- a device for grooving with a width of at most 20 mm in one pass by using a milling tool; and
- a panel pusher.

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) composite materials with core consisting, for example, of polyurethane or mineral material laminated with light alloy;
- d) polymer-matrix composite materials and reinforced thermoplastic/thermoset/elastomeric materials; and
- e) gypsum boards, gypsum bounded fibreboards.

This document does not apply to machines

- with pressure beam and saw unit mounted behind the work-piece support;

- where the guide rails on which the saw unit moves vertically are fixed on the machine frame and the horizontal cut can only be made by manually feeding the panel;
- designed to cut in vertical direction only;
- which are displaceable;
- automatically performing two or more cutting cycles in sequence;
- intended for use in potentially explosive atmosphere; and
- manufactured before 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 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*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010, in ISO 13849-1:2015, in 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 <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 vertical panel sawing machine
machine designed for cutting panels where the work-piece is supported in a near vertical plane during cutting and where the saw unit is mounted in front of the work-piece support

Note 1 to entry: For example, see [Figure 1](#). The cut takes place either in a single straight vertical line by moving the saw unit along the moving beam or in a single horizontal line by moving the moving beam along the work-piece support. The work-piece is manually loaded and unloaded.

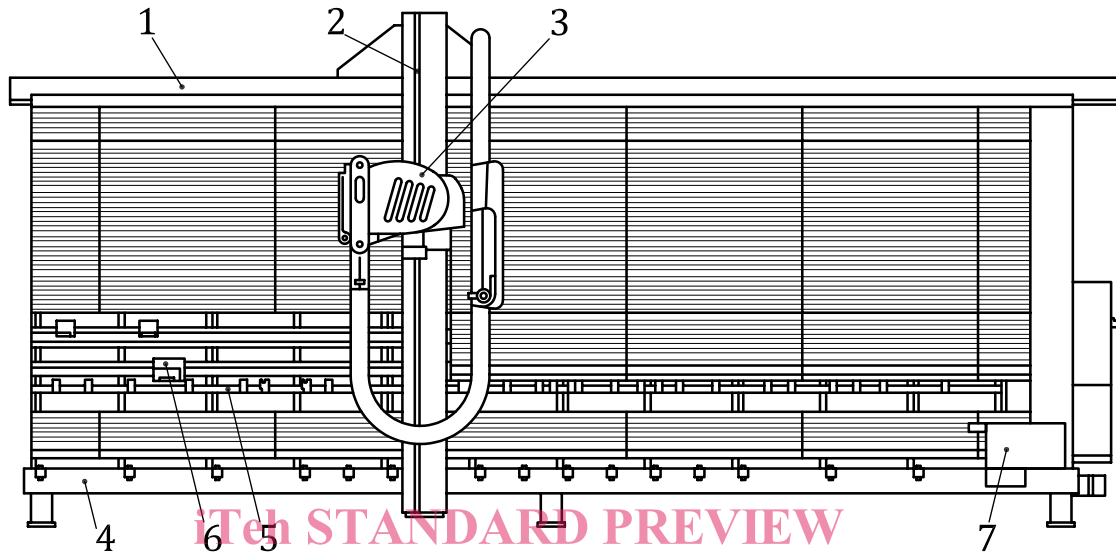
3.2 vertical panel sawing machine with hand feed
machine where the saw unit incorporating the saw blade is manually guided along the moving beam for vertical cuts and together with the moving beam along the work-piece support for horizontal cuts

Note 1 to entry: The infeed and outfeed movements can be power driven.

3.3 vertical panel sawing machine with integrated feed machine with integrated feed

machine where the saw unit incorporating the saw blade has integrated feed for its vertical movement along the moving beam and for its horizontal movement by moving the moving beam along the work-piece support

Note 1 to entry: The infeed and outfeed movements are power driven.



Key

1	frame	5	middle support device
2	moving beam	6	programmable end stop
3	saw unit	7	panel pusher with clamping system
4	base of work-piece support		

Figure 1 — Example of a vertical panel sawing machine

3.4 saw unit

supporting unit of the tools, e.g. saw blades, milling tool, which performs the cutting stroke

3.5 main saw blade

circular saw blade used to cut the work-piece into smaller pieces

3.6 saw unit rest position

position from which the saw unit starts a cut with an infeed movement and to which it returns with an outfeed movement at the end of each cut, either power driven or manually

3.7 saw unit pivoting pivoting

saw unit movement, either manually or power driven, between positions to perform horizontal and vertical cuts

**3.8
cutting cycle**

on machines with integrated feed, movements of the saw unit incorporating the tool during the machining operation

Note 1 to entry: The cutting cycle comprises:

- a) movement of the saw unit with the tool from its rest position to the cutting position;
- b) movement of the saw unit from its cutting position either along the moving beam (vertical cutting) or together with the moving beam through the cutting stroke (horizontal cutting); and
- c) returning of the saw unit to its rest position.

A further movement of the saw unit along the moving beam or of the moving beam with the saw unit back to their starting positions can follow.

**3.9
middle support device**

device for supporting a work-piece with small dimensions fitted to the work-piece support

**3.10
angle cutting device**

device fitted to the work-piece support of the machine to position the work-piece in angled orientation

Note 1 to entry: An example of angle cutting device is shown in [Figure 2](#).

**3.11
programmable end stop**

<vertical cuts> power-driven device fitted to the work-piece support of the machine designed for parallel vertical cuts at predetermined dimensions

Note 1 to entry: Machines can be provided with one or more programmable end stops.

**3.12
panel pusher**

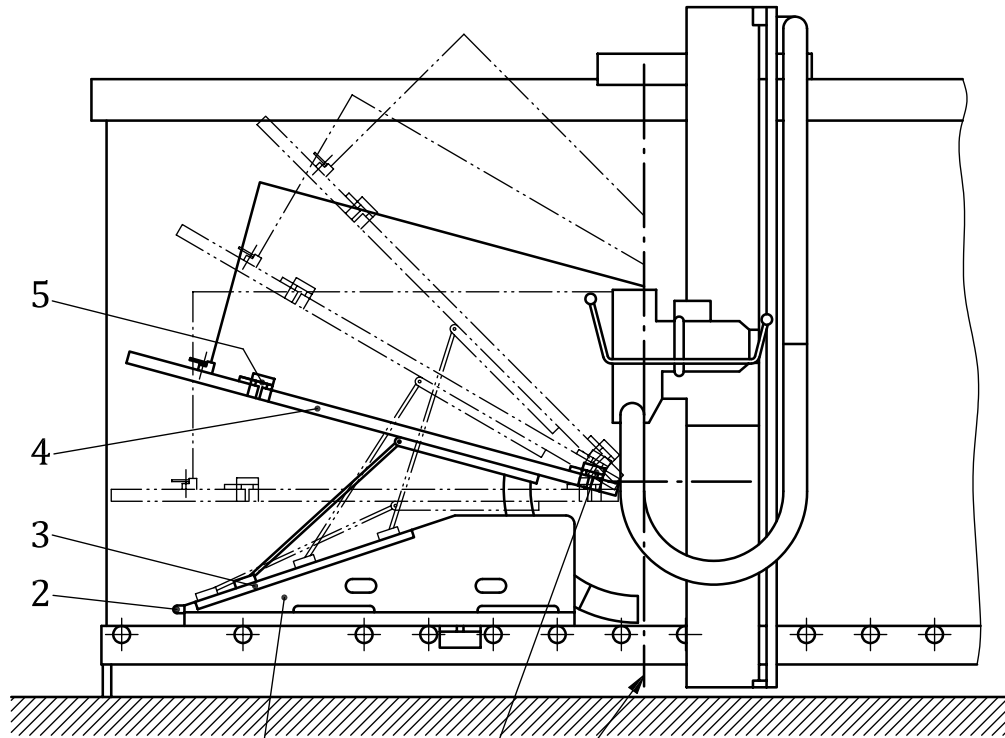
power driven movable work-piece guiding device used to move the work-piece along the work-piece support and fitted with clamping devices for holding the work-piece in position

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

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Key

- | | | | |
|---|---|---|---------------------|
| 1 | support system | 4 | work-piece support |
| 2 | lockable device for adjusting the cutting angle | 5 | work-piece clamping |
| 3 | scale for indicating the adjusted cutting angle | 6 | cutting line |

Figure 2 — Example of an angle cutting device

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/or measures or by reference to relevant standards.

These hazards are listed in [Table 1](#).

Table 1 — List of significant hazards

No.	Hazards, hazardous situations and events	ISO 12100:2010	Relevant clause of ISO 19085-4:2018
1	Mechanical hazards related to — Machine parts or work-pieces due to		
	a) shape	6.2.2.1, 6.2.2.2, 6.3	6.3 , 6.9.2 , 6.10 , 6.6 , 7.3 , 8.2 , 8.3 , Annex F
	b) relative location		5.2 , 6.6 , 8.2
	c) mass and stability (potential energy of elements which may move under the effect of gravity)		6.10
	d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion)		6.10
	e) mechanical strength		6.2 , 6.10 , 6.6 , Annexes B and C
	— Accumulation of energy inside the machinery by		
	a) elastic elements (springs)	6.2.10, 6.3.5.4	7.5
	b) gases under pressure		7.7 , 7.12 , 8.3
1.1	Crushing hazard		6.10 , 6.6 , 6.6.4
1.2	Shearing hazard		6.6 , 6.6.4
1.3	Cutting or severing hazard		6.6 , 8.1
1.4	Entanglement hazard		6.6 , 6.6.4
1.5	Drawing-in or trapping hazard		6.6 , 6.6.4
1.6	Impact hazard		6.10 , 6.7
2	Electrical hazards due to		
2.1	Contact of persons with live parts (direct contact)	6.2.9, 6.3.5.4	7.4 , 7.12
2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	6.2.9	7.4 , 7.12
2.4	Electrostatic phenomena	6.2.9	7.11
4	Hazards generated by noise , resulting in		
4.1	Hearing loss (deafness), other physiological disorders (loss of balance, loss of awareness)	6.2.2.2, 6.3	7.2
4.2	Accidents due to interference with speech communication, acoustic signals	6.2.2.2, 6.3	7.2
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	6.2.3 b), 6.2.4	7.3 , 8.3
7.2	Fire	6.2.4	7.1
8	Hazards generated by neglecting ergonomic principles in machinery design		
8.1	Unhealthy postures or excessive effort	6.2.7, 6.2.8, 6.2.11.12, 6.3.5.5, 6.3.5.6	5.2 , 7.5
8.2	Hand-arm or foot-leg anatomy	6.2.8	7.5
8.4	Local lighting	6.2.8	8.3
8.5	Mental overload and underload, stress	6.2.8	8.3
8.6	Human error, human behaviour (see 10.6)	6.2.8, 6.2.11.8, 6.2.11.10, 6.3.5.2, 6.4	7.14 , 8.3
8.7	Design, location or identification of manual controls	6.2.8, 6.2.11.8	5.2
8.8	Design or location of visual display units	6.2.8, 6.4.2	5.2