INTERNATIONAL STANDARD

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Second edition
2021-10

Woodworking machines — Safety —

Part 2: Horizontal beam panel circular sawing machines

Machines à bois — Sécurité —

Partie 2: Scies circulaires à panneaux horizontales à presseur

Reference number
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Contents

Page

Foreword ..... **v**
Introduction ..... **vi**
1 Scope **1**
2 Normative references **3**
3 Terms and definitions **3**
4 Safety requirements and measures for controls **8**
4.1 Safety and reliability of control systems 8
4.2 Control devices 8
4.3 Start 9
4.3.1 Direct start 9
4.3.2 Start via control power-on 9
4.3.3 Operating conditions 9
4.4 Safe stops 10
4.4.1 General 10
4.4.2 Normal stop 10
4.4.3 Operational stop 11
4.4.4 Emergency stop 11
4.5 Braking function of tools 11
4.6 Mode selection 11
4.7 Tool speed changing 11
4.7.1 Speed changing by shifting the belts on the pulleys 11
4.7.2 Speed changing by incremental speed change motor 11
4.7.3 Infinitely variable speed by frequency inverter 11
4.8 Failure of any power supply 11
4.9 Manual reset control 12
4.10 Standstill detection and monitoring 12
4.11 Machine moving parts speed monitoring 12
4.12 Time delay 12
4.13 Teleservice 12
5 Safety requirements and measures for protection against mechanical hazards **12**
5.1 Stability 12
5.2 Risk of break-up during operation 12
5.3 Tool and tool fixing design 12
5.3.1 General 12
5.3.2 Spindle locking 12
5.3.3 Circular saw blade fixing device 12
5.3.4 Flange dimension for circular saw blades 13
5.4 Braking 13
5.4.1 Braking of tools 13
5.4.2 Maximum run-down time 13
5.4.3 Brake release 13
5.5 Safeguards 13
5.5.1 Fixed guards 13
5.5.2 Interlocking movable guards 13
5.5.3 Hold-to-run control 13
5.5.4 Two-hand control 13
5.5.5 Electro-sensitive protective equipment (ESPE) 13
5.5.6 Pressure-sensitive protective equipment (PSPE) 13
5.5.7 Enabling control 14
5.6 Prevention of access to hazardous moving parts 14
5.6.1 Safeguarding the saw blades outside the cutting area 14
5.6.2 Safeguarding the saw blades in the cutting area 14

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5.6.3 Safeguarding the moving parts at the front cutting line 15
5.6.4 Safeguarding the pressure beam 17
5.6.5 Safeguarding the side pressure device 20
5.6.6 Safeguarding the front side turn table 20
5.6.7 Safeguarding the pushing out device 20
5.6.8 Safeguarding the rear of the machine with panel pusher (except loading zone) 20
5.6.9 Safeguarding the loading zone at the rear of the machine with panel pusher 21
5.6.10 Minimum clearance at the unloading area 26
5.6.11 Predisposition for top loading/unloading by an external system 27
5.6.12 Integrated trimming unit for offcuts management 27
5.7 Impact hazard 27
5.8 Clamping devices 28
5.9 Measures against ejection 28
5.9.1 General 28
5.9.2 Guards materials and characteristics 28
5.10 Workpiece supports and guides 28

6 Safety requirements and measures for protection against other hazards 29
6.1 Fire 29
6.2 Noise 29
6.2.1 Noise reduction at the design stage 29
6.2.2 Noise emission measurement 29
6.3 Emission of chips and dust 29
6.4 Electricity 30
6.5 Ergonomics and handling 30
6.6 Lighting 30
6.7 Pneumatics 30
6.8 Hydraulics 30
6.9 Electromagnetic compatibility 30
6.10 Laser 30
6.11 Static electricity 30
6.12 Errors of fitting 30
6.13 Isolation 30
6.14 Maintenance 30
6.15 Relevant but not significant hazards 30

7 Information for use 30
7.1 Warning devices 30
7.2 Marking 31
7.2.1 General 31
7.2.2 Additional markings 31
7.3 Instruction handbook 31
7.3.1 General 31
7.3.2 Additional information 31

Annex A (informative) **List of significant hazards 33**

Annex B (informative) **Performance level required 35**

Annex C (normative) **Stability test 37**

Annex D (normative) **Test for braking function 38**

Annex E (normative) **Impact test for guards 39**

Annex F (normative) **Noise test code 40**

Annex G (normative) **Rigidity tests for sectional safety curtain material 43**

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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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 4, *Woodworking machines*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 142, *Woodworking machines - Safety,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 19085-2:2017), which has been technically revised. The main changes compared to the previous edition are as follows:

— the Scope now specifies that machines are intended for continuous production use, and other additional working units have been added, as well as special workable materials and an exclusion;

— the list of significant hazards has been moved to new Annex A;

— the structure has been simplified, in particular in 5.6;

— machines without panel pusher have been included and fully covered in 5.6.4;

— other loading devices have been considered in 5.6.9.1, 5.6.9.2 and new subclause 5.6.9.3;

— requirements on minimum gaps at the unloading area have been added in new subclause 5.6.10;

— Subclause 6.2 has been updated and a new full noise test code has been added in Annex F.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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

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Introduction

The ISO 19085 series 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.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organisations, market surveillance etc.)

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e. g. for maintenance (small, medium and large enterprises);

— consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

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, to the extent specified in the Scope of the applicable part of ISO 19085.

As far as possible, the safety requirements of parts of the ISO 19085 series refer to the relevant subclauses of ISO 19085-1. Each part contains replacements and additions to the common requirements given in ISO 19085-1.

Clauses 1 to 3 are specific to each part and, therefore, replace ISO 19085-1:2021, Clauses 1 to 3.

For Clauses 4 to 7 and the annexes, ISO 19085-1:2021, Clauses 4 to 7 and Annexes, each subclause can be:

— confirmed as a whole;

— confirmed with additions;

— excluded in total; or

— replaced with specific text.

This is indicated by one of the following possible statements:

— “ISO 19085-1:2021, [subclause/Annex], applies”;

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— “ISO 19085-1:2021, [subclause/Annex], applies with the following additions.” or “ISO 19085-1:2021, [subclause/Annex], applies with the following additions, subdivided into further specific subclauses.”;

— “ISO 19085-1:2021, [subclause/Annex], does not apply.”;

— “ISO 19085-1:2021, [subclause/Annex], is replaced by the following text.” or “ISO 19085-1:2021, [subclause/Annex], is replaced by the following text, subdivided into further specific subclauses.”.

Other subclauses and annexes specific to this document are indicated by the introductory sentence: “Subclause/Annex specific to this document.”.

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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 workpiece support, which are manually and/or powered loaded and manually unloaded, capable of continuous production use, as defined in 3.1 and hereinafter referred to as "machines".

This document deals with all significant hazards, hazardous situations and events as listed in Annex A, 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.

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);

— workpiece vacuum clamping as part of a front side turn table or of a panel loading device;

— panel pusher;

— independent panel pushers;

— additional panel pushers mounted on the panel pusher carriage;

— additional panel pusher with integrated label printer device;

— lifting platform;

— device for automatic loading of thin panels;

— device for base board unloading by gravity;

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— device for base board powered unloading;

— device for panel unloading in limited space condition;

— loading or pre-loading roller conveyors;

— pressure beam with additional flaps to increase dust extraction efficiency;

— saw blade cooling system by air or water-air or oil-air;

— vibrating conveyor with/without trimming unit for offcuts management;

— predisposition for top loading/unloading by an external system directly on the machine table and/or on the machine preloading roller conveyor and/or on the machine lifting table.

NOTE base board is a support panel underlying the panel stack, to protect the panels from damages during transportation.

The machines are designed for cutting panels consisting of:

a) solid wood;

b) material with similar physical characteristics to wood (see ISO 19085-1:2021, 3.2);

c) gypsum boards, gypsum bounded fibreboards;

d) composite materials, with core consisting of e.g. polyurethane or mineral material, laminated with light alloy;

e) cardboard;

f) foam board;

g) matrix engineered mineral boards, silicate boards;

h) polymer-matrix composite materials and reinforced thermoplastic/thermoset/elastomeric materials;

i) aluminium light alloy plates with a maximum thickness of 10 mm;

j) composite boards made from the materials listed above.

This document does not deal with hazards related to:

— specific features different from those listed 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;

— machines manufactured prior to the date of its publication.

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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 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 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

ISO 14118:2017, *Safety of machinery — Prevention of unexpected start-up*

ISO 19085-1:2021, *Woodworking machines — Safety — Part-1: common requirements*

EN 847-1:2017, *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, ISO 13849-1:2015, ISO 19085-1:2021 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
horizontal beam panel circular sawing machine
machine designed for cutting panels, fitted with one travelling *saw carriage* (3.4) per cutting line incorporating one or more circular saw blades, with horizontal workpiece support and with a *pressure beam* (3.5) holding the workpiece in position during cutting

Note 1 to entry: The workpiece can be mechanically positioned by a *panel pusher* (3.6) for the cuts. The cutting stroke is power driven. Before the cutting stroke commences, the saw blade is automatically raised and is lowered below the workpiece support for the return stroke. Examples are shown in Figure 1.

3.2
manual loading
operation where the operator puts the workpiece directly on the workpiece support from the front side of the machine, or onto an intermediate loading device that cannot keep 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 workpiece directly from the workpiece support, or from an intermediate unloading device that cannot keep the operator away from the machine front cutting line of at least 1 500 mm during operation

3.4
saw carriage
supporting unit of the saw blades, which performs the cutting stroke

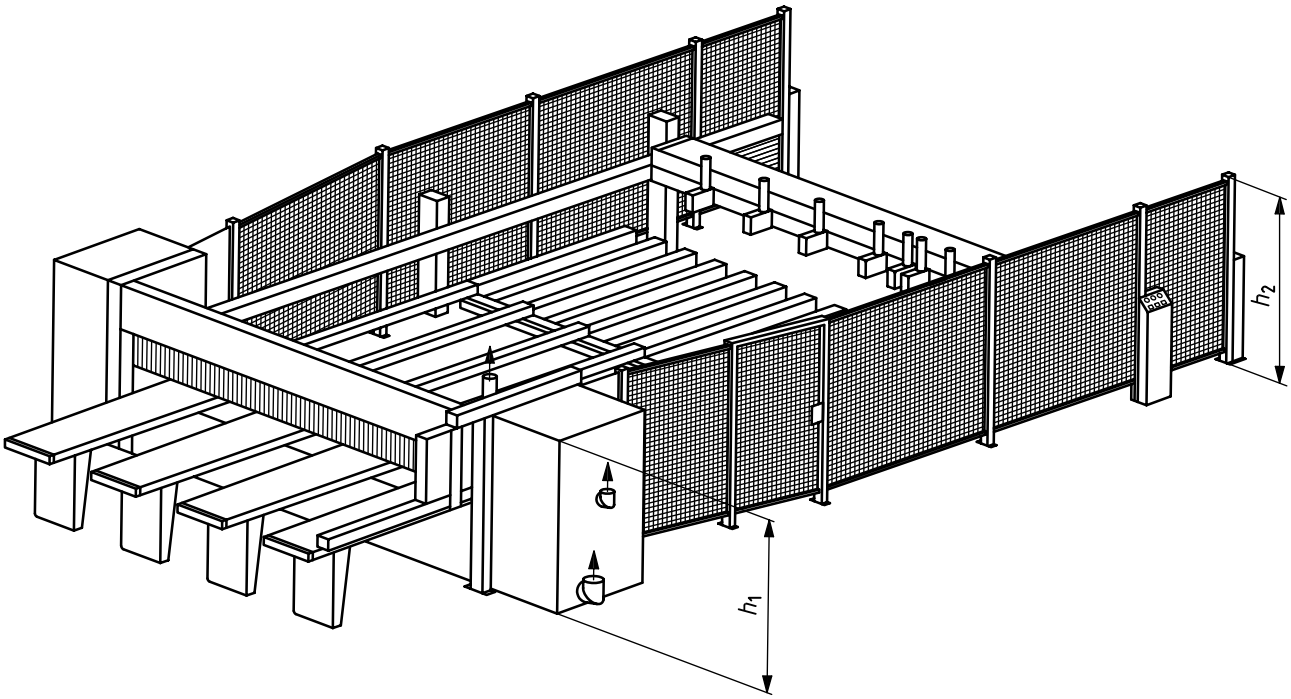
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3.5
pressure beam
workpiece clamping device extending across the full working width of the machine with the function to hold the workpiece down to the workpiece support during cutting

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

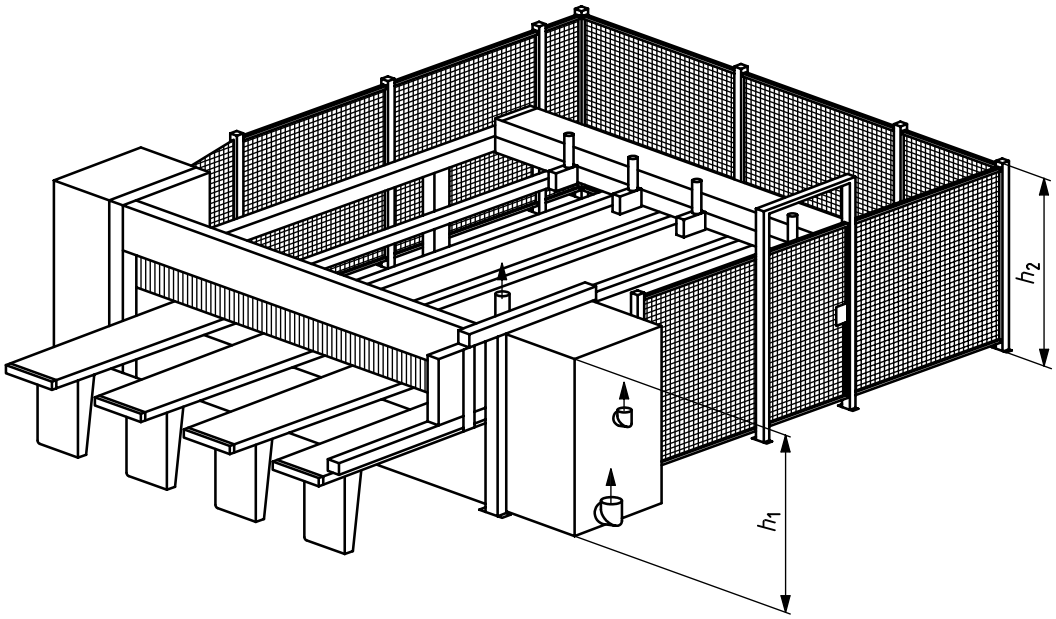
3.6
panel pusher
movable workpiece guiding device used to position the workpiece over the line of cut, and fitted with holding devices e.g. collets for holding the workpiece in position

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

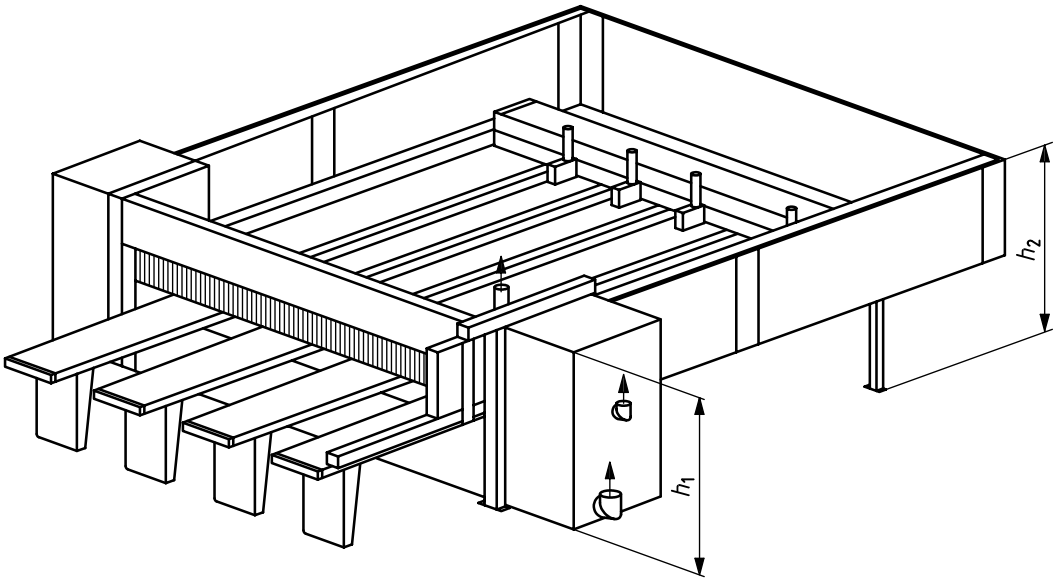


a) Example of a machine with panel pusher and panel loading from the rear side by a powered loading device and with perimeter fence and light barrier

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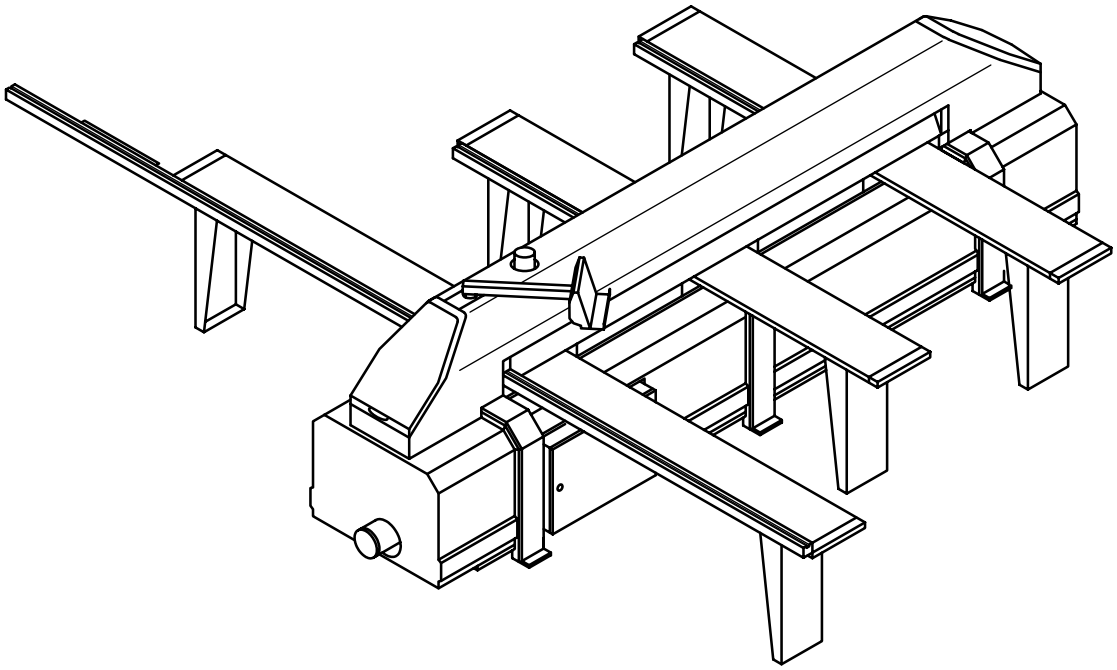


b) Example of a machine with panel pusher and panel loading from the front side and perimeter fence



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

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d) Example of a machine without panel pusher

Key

h_1 height of the front side fixed guards

h_2 height of the perimeter fence

Figure 1 — Examples of horizontal beam panel saws

3.7
cutting cycle
single cut operation consisting of vertical movements of the saw blades and horizontal movements of the *saw carriage* (3.4)

3.8
rest position
<saw carriage> position in either the left or the right side of the machine body and outside of the cutting area to which the *saw carriage* (3.4) can return at the end of each *cutting cycle* (3.7)

3.9
rest position
<saw blade> position of the saw blade below the machine table

3.10
pressure beam rest position
highest position of the *pressure beam* (3.5)

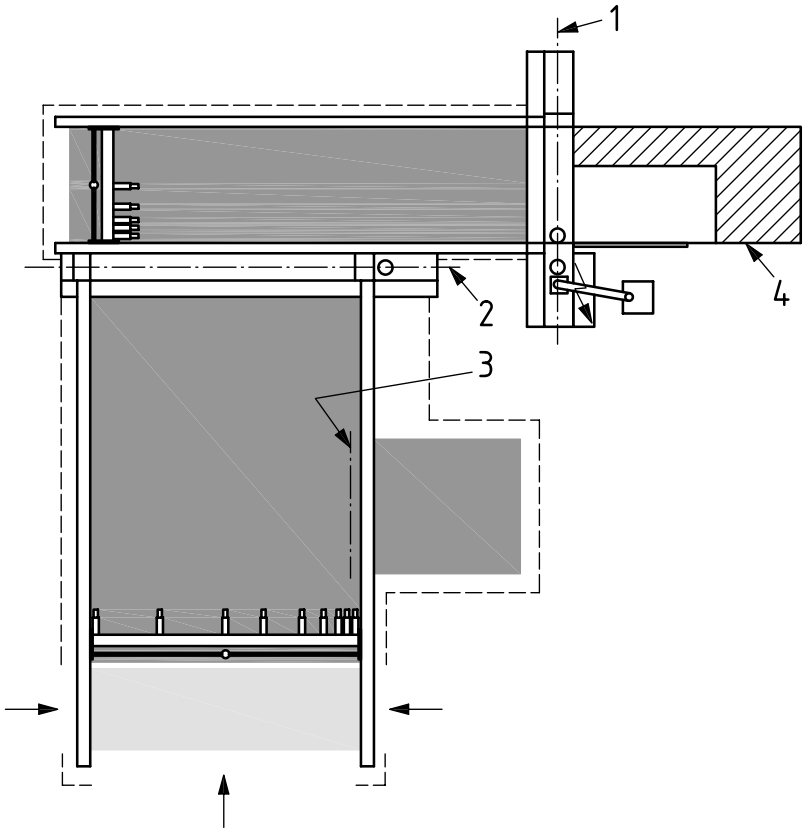
3.11
front cutting line
cutting line closest to the operator's position

Note 1 to entry: See Figure 2, key 1.

3.12
head cutting line
first cutting line to divide a panel before further cuts, where the *saw carriage* (3.4) can be mounted below or above the workpiece support

Note 1 to entry: See Figure 2, key 3.

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Key

1	front cutting line	3	head cutting line
2	longitudinal cutting line	4	unloading area

Figure 2 — Horizontal beam panel saw cutting lines

3.13
side pressure device
power operated movable workpiece guiding device to push the workpiece against the fence for right-angled cuts

3.14
panel turning device
device integrated into the rear workpiece support to turn the panel for e.g. rectangular cut

3.15
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 workpieces or stacks of panels

3.16
pushing out device
movable device to move the last residues of a panel towards the front of the *pressure beam* (3.5) 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.

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