



**International
Standard**

ISO 19085-11

**Woodworking machines — Safety —
Part 11:
Combined machines**

*Machines à bois — Sécurité —
Partie 11: Machines combinées*

**Second edition
2024-07**

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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 document 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).

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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 19085-11:2020), which has been technically revised. The main changes are as follows:

- the scope now specifies that machines are intended for continuous production use;
- the list of significant hazards has been moved to a new [Annex A](#);
- [subclause 6.2](#) has been updated;
- a new noise test code has been specified in [Annex F](#).

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

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.

Introduction

The ISO 19085 series provides technical safety requirements for the design and construction of woodworking machinery, as well as for the content of the relevant instruction handbook. It concerns designers, manufacturers, suppliers and importers of the machines specified in the scope.

This document is a type-C standard as stated in ISO 12100:2010.

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 (e.g. regulators, accident prevention organisations, market surveillance).

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 in 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 (as defined in ISO 12100:2010), 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 the ISO 19085 series applicable to that type, together with the relevant requirements from ISO 19085-1:2021, to the extent specified in the Scope of the applicable part of the ISO 19085 series.

As far as possible, in this document, safety requirements are referenced to the relevant subclauses of ISO 19085-1:2021, ISO 19085-5:2024, ISO 19085-6:2024, ISO 19085-7:2024 and ISO 19085-9:2024 to avoid repetition and reduce their length.

Specific subclauses and annexes in this document without a correspondent in ISO 19085-1:2021, ISO 19085-5:2024, ISO 19085-6:2024, ISO 19085-7:2024 and ISO 19085-9:2024 are indicated by the introductory sentence: "Subclause (or annex) specific to this document."

[Clauses 1 to 3](#) are specific to each part and, therefore are distinct from ISO 19085-1:2021, Clauses 1 to 3.

Woodworking machines — Safety —

Part 11: Combined machines

1 Scope

This document specifies the safety requirements and measures for combined woodworking machines (defined in 3.1), capable of continuous production use, with manual loading and unloading of the workpiece and hereinafter referred to also as “machines”.

The machines are designed to cut solid wood and material with similar physical characteristics to wood (see ISO 19085-1:2021, 3.2).

This document deals with all significant hazards, hazardous situations and events, listed in Annex A, relevant to the machines, when operated, adjusted and maintained as intended and under the conditions foreseen by the manufacturer; reasonably foreseeable misuse has been considered too. Transport, assembly, dismantling, disabling and scrapping phases have also been taken into account.

This document applies to machines also equipped with the devices or additional working units listed in the Scopes of ISO 19085-5:2024, ISO 19085-6:2024, ISO 19085-7:2024 and ISO 19085-9:2024.

This document does not apply to:

- a) machines incorporating a planing unit and a mortising device only;
NOTE Machines incorporating a planing unit and a mortising device only are dealt with in ISO 19085-7:2024.
- b) combined machines incorporating a band saw unit;
- c) machines with a mortising unit with a separate drive other than the planing unit drive;
- d) machines intended for use in potentially explosive atmosphere;
- e) machines manufactured before the publication of this document.

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

ISO 19085-5:2024, *Woodworking machines — Safety — Part 5: Dimension saws*

ISO 19085-6:2024, *Woodworking machines — Safety — Part 6: Single spindle vertical moulding machines (toupie)*

ISO 19085-7:2024, *Woodworking machines — Safety — Part 7: Surface planing, thickness planing, combined surface/thickness planing machines*

ISO 19085-9:2024, *Woodworking machines — Safety — Part 9: Circular saw benches (with and without sliding table)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010, ISO 19085-1:2021, ISO 19085-5:2024, ISO 19085-6:2024, ISO 19085-7:2024, ISO 19085-9:2024 and the following apply.

ISO and IEC maintain terminology 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

combined machine

machine incorporating two or three separately usable working units, among a *sawing unit* (3.2), a *moulding unit* (3.5) and a *planing unit* (3.6)

Note 1 to entry: Workpiece feed is primarily by hand, but the machine can also have devices to connect to demountable power feed units.

Note 2 to entry: The sawing unit and the moulding unit can work simultaneously.

Note 3 to entry: Examples of such machines are given in [Figures 2, 3, 4](#) and [5](#).

3.2

sawing unit

dimension saw unit (3.3) or *table saw unit* (3.4), incorporated in a *combined machine* (3.1)

3.3

dimension saw unit

dimension saw incorporated in a *combined machine* (3.1)

Note 1 to entry: For the definition of a dimension saw, also called a sliding table circular sawing machine, see ISO 19085-5:2024, 3.1.

3.4

table saw unit

table saw incorporated in a *combined machine* (3.1)

Note 1 to entry: For the definition of a table saw, also called a circular saw bench, see ISO 19085-9:2024, 3.1.

3.5

moulding unit

single spindle vertical moulding machine incorporated in a *combined machine* (3.1)

Note 1 to entry: For the definition of a single spindle vertical moulding machine, see ISO 19085-6:2024, 3.1.

3.6

planing unit

combined surface/thickness planing machine incorporated in a *combined machine* (3.1)

Note 1 to entry: For the definition of a combined surface/thickness planing machine, see ISO 19085-7:2024, 3.4.

3.7

tenoning-sawing mode

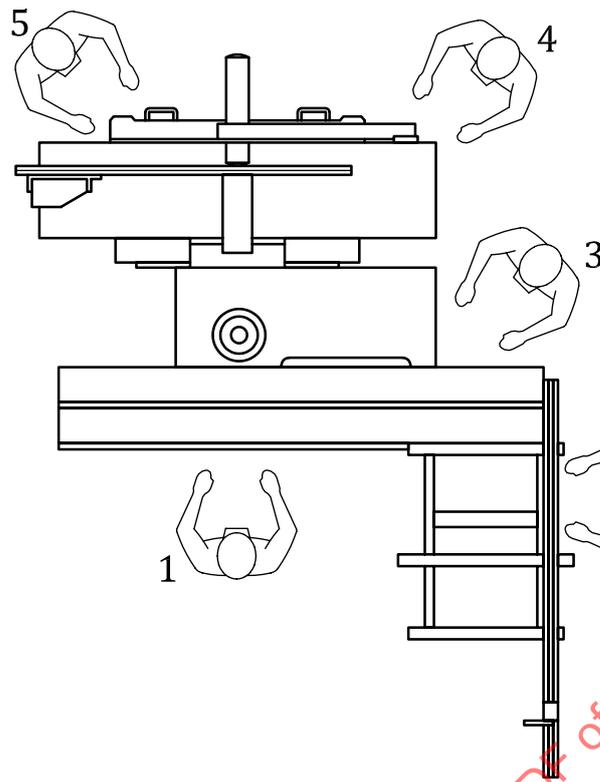
use of the *sawing unit* (3.2) and *moulding unit* (3.5) simultaneously to produce tenons

3.8

workstation

position of the operator at the machine to operate a working unit

Note 1 to entry: *Combined machines* (3.1) have more than one workstation depending on the number of integrated working units (see [Figure 1](#)).



Key

- 1 workstation during moulding
- 2 workstation during sawing
- 3 alternative workstation during sawing
- 4 workstation during thickness planing
- 5 workstation during surface planing

Figure 1 — Typical workstations

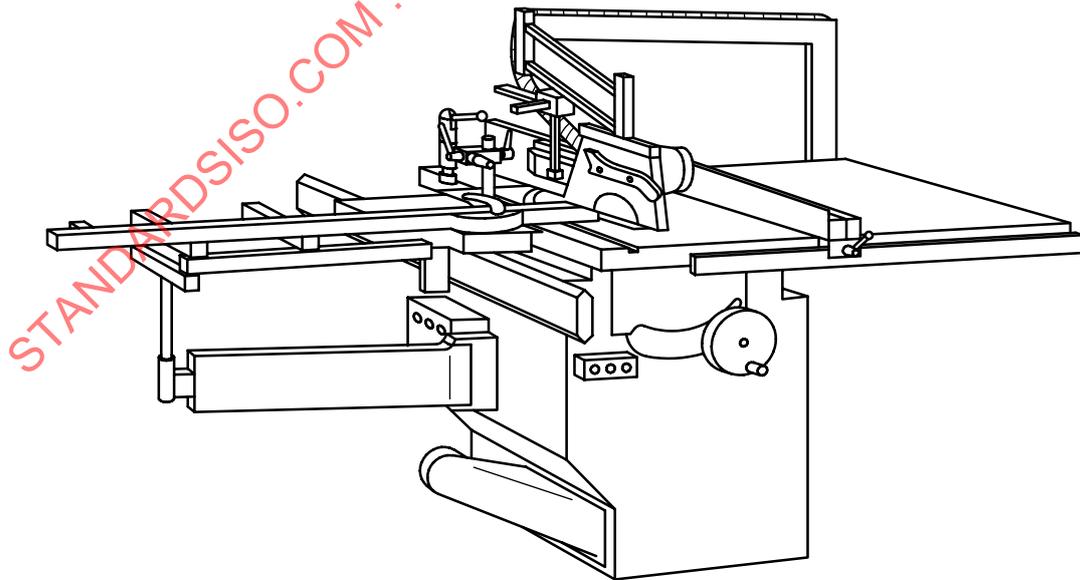


Figure 2 — Example of a machine with table saw unit and moulding unit, fitted with a sliding table

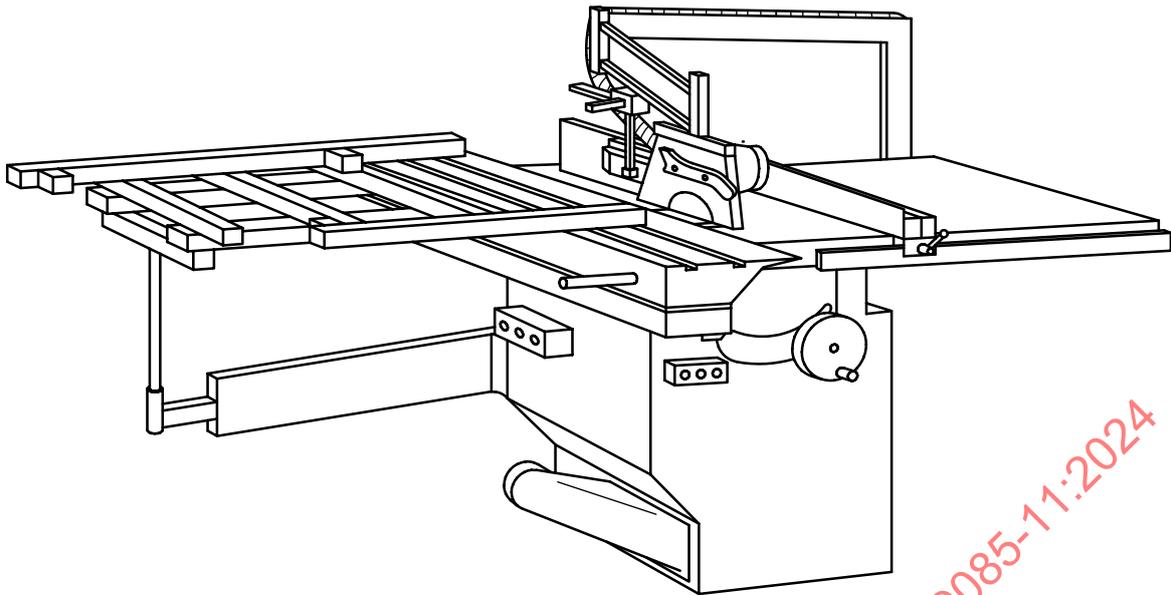


Figure 3 — Example of a machine with dimension saw unit and moulding unit

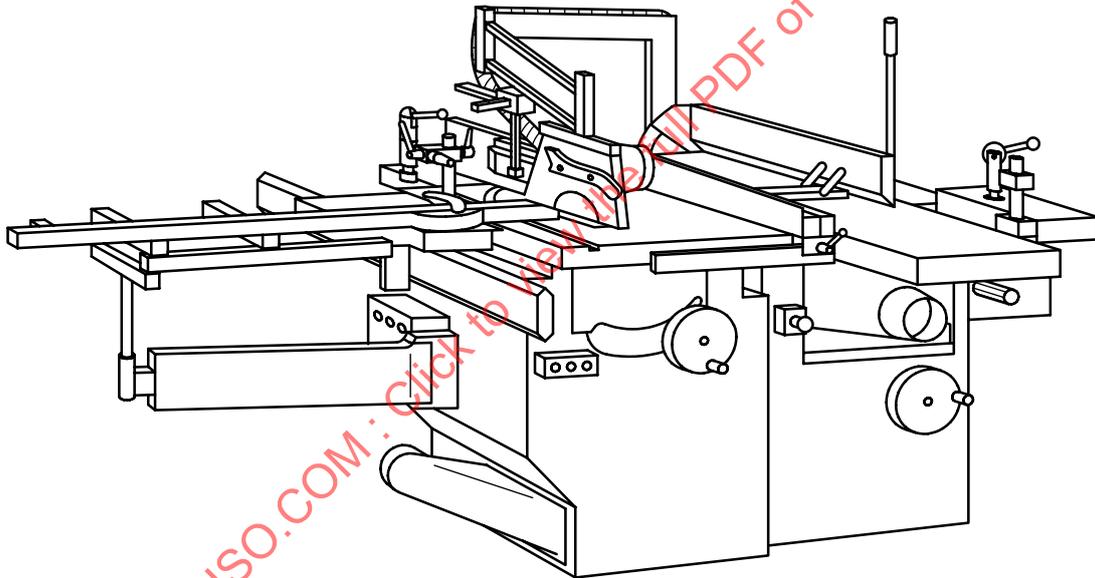


Figure 4 — Example of a machine with table saw unit, moulding unit and planing unit, and with a mortising device fitted with a sliding table

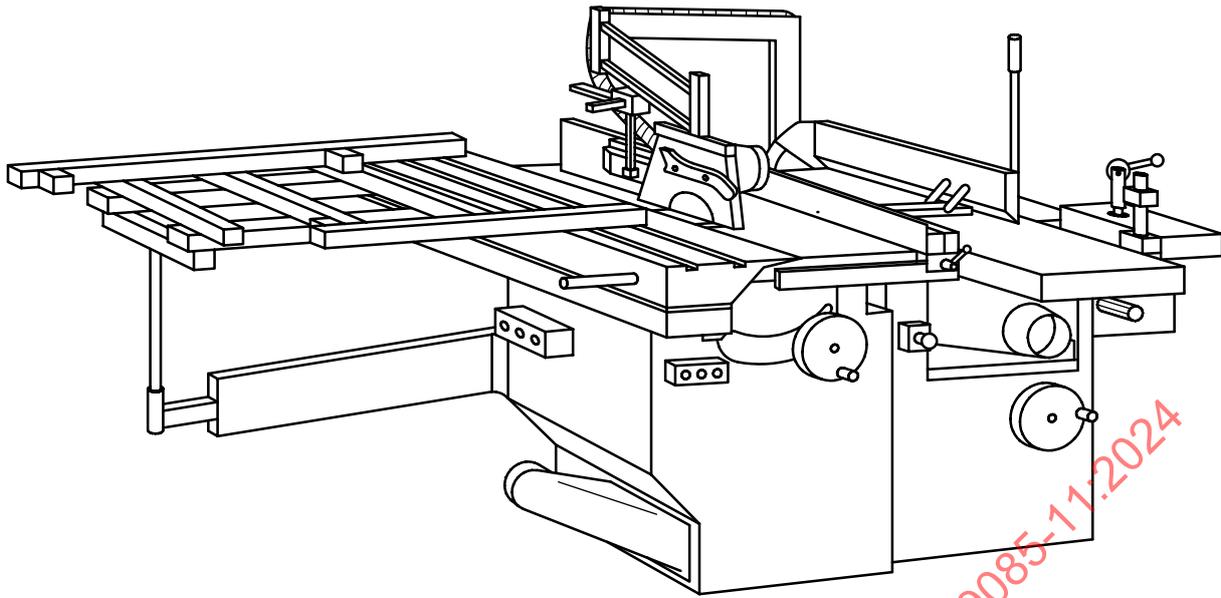


Figure 5 — Example of a machine with dimension saw unit, moulding unit and planing unit, and with a mortising device

4 Safety requirements and measures for controls

4.1 Safety and reliability of control systems

ISO 19085-1:2021, 4.1, applies with the following additions.

Table B.1 summarizes the performance levels required (PL_r) specified in [Clauses 4](#) and [5](#) for each safety function.

4.2 Control devices

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 4.2 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 4.2 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 4.2 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 4.2 applies.

As an exception, the machine may be fitted with a single start control device for all tool drives, which shall be positioned together with either:

- the unit selector (see [4.3](#)) at a location on the machine body from which the operator has a good view over the whole machine; or
- the unit selector on a moveable control panel.

Where it is not possible to meet the height requirement of minimum 600 mm, the height for all hand-operated control devices except start, normal stop and emergency stop, may be reduced to at least 500 mm from the floor level.

The main power switch may be located at a height of at least 500 mm above the floor level. The plug, fixed to the machine where supply disconnection is through a plug/socket combination, may be located at a height of at least 300 mm above the floor level.

Verification is done by checking the relevant drawings and circuit diagrams, inspection of the machine, and relevant functional testing of the machine.

4.3 Start

4.3.1 Direct start

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 4.3.1 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 4.3.1 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 4.3.1 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 4.3.1 applies.

In addition, the following requirements apply.

Operation of more than one working unit at the same time shall be prevented by a unit selector or by an interlocking in the control system of the working unit start. As an exception, the sawing unit and the moulding unit may be simultaneously operated in tenoning-sawing mode (see 4.6).

When a unit selector is used, indication of the selected working unit shall be provided, for example, by the position of the unit selector, the provision of an indicating light or a visual display indication.

The safety related parts of the control system (SRP/CS) for the prevention of simultaneous operation of more than one working unit shall achieve $PL_r = c$.

Changing the selected unit by the unit selector shall:

- a) initiate a safe stop;
- b) not initiate any movement.

Verification is done by checking the relevant drawings and circuit diagrams, inspection of the machine and relevant functional testing of the machine.

4.3.2 Start via control power-on

ISO 19085-1:2021, 4.3.2 does not apply.

4.4 Safe stops

4.4.1 General

ISO 19085-1:2021, 4.4.1 applies.

4.4.2 Normal stop

ISO 19085-1:2021, 4.4.2 applies with the following additions.

Activation of any normal stop device, regardless of its position, shall stop all machines actuators.

4.4.3 Operational stop

ISO 19085-1:2021, 4.4.3 does not apply.

4.4.4 Emergency stop

ISO 19085-1:2021, 4.4.4 applies with the following additions.

As an exception, emergency stop control is not required on machines without a socket for a demountable power feed and without tenoning-sawing mode, regardless of the number of machine actuators.

4.5 Braking function of tools

ISO 19085-1:2021, 4.5 applies.

4.6 Mode selection

ISO 19085-1:2021, 4.6 is replaced by the following text.

Machines where the sawing unit and the moulding unit can be operated simultaneously (see also [4.3](#)) shall be fitted with a tenoning-sawing mode selection switch.

This mode selection shall be in accordance with the following requirements:

- a) its control system shall override all other control systems except the emergency stop;
- b) changing the mode shall not initiate any movement and the machine shall be brought to a safe stop in accordance with [4.4](#);
- c) the mode selector shall be lockable in any position, for example, by a key-operated switch.

Indication of the tenoning-sawing mode selection shall be provided, for example, by the position of the mode selector, by an indicating light or by a visual display indication.

The SRP/CS for the tenoning-sawing mode selection shall achieve $PL_r = c$.

Verification is done by checking the relevant drawings, inspection of the machine and relevant functional testing of the machine.

4.7 Tool speed changing

4.7.1 Speed changing by shifting the belts on the pulleys

ISO 19085-1:2021, 4.7.1 applies.

4.7.2 Speed changing by incremental speed change motor

ISO 19085-1:2021, 4.7.2 applies.

4.7.3 Infinitely variable speed by frequency inverter

ISO 19085-1:2021, 4.7.3 applies.

4.7.4 Spindle speed limiting device for tenoning

For machines incorporating a moulding unit, ISO 19085-6:2024, 4.7.4 applies.

4.7.5 Changing of the direction of spindle rotation

For machines incorporating a moulding unit, ISO 19085-6:2024, 4.7.5 applies.

4.8 Failure of any power supply

ISO 19085-1:2021, 4.8 applies.

4.9 Manual reset control

ISO 19085-1:2021, 4.9 does not apply.

4.10 Standstill detection and monitoring

ISO 19085-1:2021, 4.10, does not apply.

4.11 Machine moving parts speed monitoring

ISO 19085-1:2021, 4.11, applies.

4.12 Time delay

ISO 19085-1:2021, 4.12, applies.

4.13 Teleservice

ISO 19085-1:2021, 4.13, applies.

4.14 Power-driven adjustments

For machines incorporating a dimension saw unit and with power-operated adjustment of the saw blade or of the fences, ISO 19085-5:2024, 4.14, 4.14.1, 4.14.2 and 4.14.3 apply.

For machines incorporating a table saw unit and with power-operated adjustment of the saw blade or of the fences, ISO 19085-9:2024, 4.14, 4.14.1, 4.14.2 and 4.14.3 apply.

For machines incorporating a moulding unit and with power-operated adjustment of arbor, demountable power feed unit, fences or table insert, ISO 19085-6:2024, 4.14 applies.

For machines incorporating a planing unit and with power operated adjustment of the tables, ISO 19085-7:2024, 4.14, applies.

5 Safety requirements and measures for protection against mechanical hazards

5.1 Stability

ISO 19085-1:2021, 5.1 applies with the following additions.

The machines shall pass the stability test required in [Annex C](#).

For machines incorporating a dimension saw unit and a moulding unit only, ISO 19085-5:2024, 5.1, applies.

5.2 Risk of break-up during operation

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.2 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.2 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.2 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 5.2 applies.

5.3 Tool and tool fixing design

5.3.1 General

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.3.1 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.3.1 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.3.1 and Annex G apply.

For machines incorporating a planing unit, ISO 19085-7:2024, 5.3.1 applies.

5.3.2 Spindle locking

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.3.2 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.3.2 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.3.2 applies.

5.3.3 Circular saw blade fixing device

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.3.3 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.3.3 applies.

For machines incorporating a moulding unit equipped with a glass bead saw unit, ISO 19085-6:2024, 5.3.3 applies.

5.3.4 Flange dimensions for circular saw blades

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.3.4 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.3.4 applies.

For machines incorporating a moulding unit equipped with a glass bead saw unit, ISO 19085-6:2024, 5.3.4 applies.

5.3.5 Arbor rings/fixing device for milling tools

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.3.5 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.3.5 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.3.5 applies.

5.3.6 Quick tool/arbor change system

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.3.6 applies.

5.3.7 Manual adjustment of arbor height

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.3.7 applies.

5.3.8 Manual adjustment of arbor inclination

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.3.8 applies.

5.4 Braking

5.4.1 Braking of tools

ISO 19085-1:2021, 5.4.1 applies with the following addition.

The braking function shall be tested in accordance with [Annex D](#).

5.4.2 Maximum run-down time

ISO 19085-1:2021, 5.4.2 applies with the following additions.

When conducting the test for braking function on machines incorporating a sawing unit and with the device for grooving with milling tool, it shall be determined whether the condition with the greatest kinetic energy will be achieved with a saw blade or a milling tool.

5.4.3 Brake release

ISO 19085-1:2021, 5.4.3 applies.

5.5 Safeguards

5.5.1 Fixed guards

ISO 19085-1:2021, 5.5.1 applies.

5.5.2 Interlocking movable guards

5.5.2.1 General

ISO 19085-1:2021, 5.5.2.1 applies with the following additions.

Additional measures according to ISO 14119:2013, 7.2 are not required.

NOTE The motivation to defeat the interlocking devices in a reasonably foreseeable manner does not exist.

5.5.2.2 Movable guards with interlocking

ISO 19085-1:2021, 5.5.2.2 applies.

5.5.2.3 Movable guards with interlocking and guard locking

ISO 19085-1:2021, 5.5.2.3 does not apply.

5.5.3 Hold-to-run control

ISO 19085-1:2021, 5.5.3 applies.

5.5.4 Two hand control

ISO 19085-1:2021, 5.5.4 applies.

5.5.5 Electro-sensitive protection equipment (ESPE)

ISO 19085-1:2021, 5.5.5 does not apply.

5.5.6 Pressure sensitive protection equipment (PSPE)

ISO 19085-1:2021, 5.5.6 applies.

5.5.7 Enabling control device

ISO 19085-1:2021, 5.5.7 does not apply.

5.6 Prevention of access to hazardous moving parts

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.6 applies with the following additions.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.6 applies with the following additions.

As an exception to ISO 19085-5:2024, 5.6 and to ISO 19085-9:2024, 5.6, machines incorporating a moulding, a planing and a sawing unit may have a saw blade guard mounted to the riving knife also if:

- a) they have a maximum saw blade diameter >315 mm and ≤ 350 mm; or
- b) they are fitted with a device for grooving with milling tools on the saw spindle.

In addition, on machines with the facility to adjust the saw blade height, coverage of the saw blade or the milling tool during grooving shall be made possible by providing mountings for fixing a protective device (see [5.11](#) and [7.3.2](#)).

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.6 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 5.6 applies with the following additions.

On machines where it is necessary to move the bridge type guard to a position beside or below the level of the surface planing table in order to enable the use of a different working unit (e.g. to position the fence of the saw unit), the bridge type guard shall be movable without the aid of a tool and shall remain attached to the machine.

As an exception to ISO 19085-7:2024, 5.6.1.1.2 the rear guard of the fence may be removable without the aid of a tool. A dedicated place on the machine shall be provided and indicated to store this guard when dismantled.

Verification is done by checking the relevant drawings, inspection of the machine and relevant functional testing of the machine.

5.7 Impact hazard

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.7 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.7 applies.

5.8 Clamping devices

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.8 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.8 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.8 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 5.8 applies.

For machines with tenoning-sawing mode, a workpiece clamping device shall be provided.

5.9 Measures against ejection

5.9.1 General

ISO 19085-1:2021, 5.9.1 applies.

5.9.2 Guards materials and characteristics

5.9.2.1 Choice of class of guards

ISO 19085-1:2021, 5.9.2.1 applies with the following additions.

Guards used to prevent ejection shall be of class B.

5.9.2.2 Guards of class A

ISO 19085-1:2021, 5.9.2.2 does not apply.

5.9.2.3 Guards of class B

ISO 19085-1:2021, 5.9.2.3 applies with the following additions.

The guards shall pass the test required in [Annex E](#).

5.9.3 Anti-kickback devices

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.9.3 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.9.3 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.9.3 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 5.9.3 applies.

5.10 Workpiece supports and guides

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.10.1 and 5.10.2 apply.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.10.1 and 5.10.2 apply.

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.10.1.2, 5.10.2 and 5.10.3 apply.

The minimum table dimensions for the sawing and moulding units shall be in accordance with [Annex G](#).

For machines with tenoning-sawing mode, a movable workpiece support, for example a sliding table, shall be provided.

For machines incorporating a planing unit, ISO 19085-7:2024, 5.10 applies with the following additions.

As an exception to ISO 19085-7:2024, 5.10.5 on machines with cutting width higher than 310 mm, the minimum fence length on the outfeed side from the spindle axis may be 360 mm.

If the manufacturer provides a rip fence for the sawing unit which can also be used as a fence for surface planing, it shall meet all requirements of ISO 19085-5:2024, 5.10.1 or ISO 19085-9:2024, 5.10.1 during sawing, as well as those of ISO 19085-7:2024, 5.10.5 during surface planing.

A slot between the table for the sawing and moulding units and the surface planing table may be provided.

Verification is done by checking the relevant drawings, measurements, inspection of the machine and relevant functional testing of the machine.

5.11 Safety appliances

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 5.11 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 5.11 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 5.11 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 5.11 applies.

5.12 Elements not in use

Subclause specific to this document.

On machines incorporating a sawing unit and a moulding unit, it shall be possible to vertically adjust the moulding spindle (without milling tool) and the largest saw blade for which the machine is designed, together with its riving knife, completely below the table.

A cover to close the table bore for the moulding spindle shall be provided.

The fence plates for straight work moulding (see ISO 19085-6:2024, 5.10.2) shall be removable from the machine without the aid of a tool.

Verification is done by checking the relevant drawings, inspection of the machine and relevant functional testing of the machine.

5.13 Adjustments in tenoning-sawing mode

Subclause specific to this document.

Machines equipped with tenoning-sawing mode shall be provided with:

- a) a saw blade mounting adjustable in axial direction;
- b) a means for positioning the table inserts, so that any slot in the table for the saw blade and any gap to permit positioning of the table inserts does not exceed 12 mm.

Verification is done by checking the relevant drawings, inspection of the machine and relevant functional testing of the machine.

6 Safety requirements and measures for protection against other hazards

6.1 Fire

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 6.1 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 6.1 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 6.1 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 6.1 applies.

6.2 Noise

6.2.1 Noise reduction at the design stage

ISO 19085-1:2021, 6.2.1 applies.

6.2.2 Noise emission measurement and declaration

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 6.2.2 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 6.2.2 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 6.2.2 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 6.2.2 applies.

The emission sound pressure level at the workstations shall be measured at the typical workstation positions as shown in [Figure 1](#).

[Annex F](#) shall be applied for the noise test codes of combined machines.

6.3 Emission of chips and dust

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 6.3 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 6.3 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 6.3 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 6.3 applies.

6.4 Electricity

ISO 19085-1:2021, 6.4 applies.

6.5 Ergonomics and handling

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 6.5 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 6.5 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 6.5 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 6.5 applies.

6.6 Lighting

ISO 19085-1:2021, 6.6 does not apply.

6.7 Pneumatics

ISO 19085-1:2021, 6.7 applies.

6.8 Hydraulics

ISO 19085-1:2021, 6.8 does not apply.

6.9 Electromagnetic compatibility

ISO 19085-1:2021, 6.9 applies.

6.10 Laser

ISO 19085-1:2021, 6.10 applies.

6.11 Static electricity

ISO 19085-1:2021, 6.11 applies.

6.12 Errors of fitting

ISO 19085-1:2021, 6.12 applies with the following additions.

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 6.12 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 6.12 applies.

6.13 Isolation

ISO 19085-1:2021, 6.13 applies.

6.14 Maintenance

ISO 19085-1:2021, 6.14 applies.

6.15 Relevant but not significant hazards

ISO 19085-1:2021, 6.15 applies.

7 Information for use

7.1 Warning devices

ISO 19085-1:2021, 7.1 applies with the following additions.

For machines incorporating a moulding unit, ISO 19085-6:2024, 7.1 applies.

7.2 Markings

7.2.1 General

ISO 19085-1:2021, 7.2.1 applies.

7.2.2 Additional markings

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 7.2.2 applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, 7.2.2 applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, 7.2.2 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 7.2.2 applies with the following additions.

On machines where the rear guard of the fence is removable (see 5.6), a label shall be provided on the rear guard operating position on the fence, instructing the user to mount the rear guard of the fence in its right position before operating the planing unit.

7.3 Instruction handbook

7.3.1 General

ISO 19085-1:2021, 7.3.1 applies with the following additions.

The requirement in ISO 19085-1:2021, 7.3.1 q) (i.e. noise declaration) applies to each working unit and, if applicable, to operation in tenoning-sawing mode. An example of noise declaration for combined machines is given in [Annex F](#).

7.3.2 Additional information

For machines incorporating a dimension saw unit, ISO 19085-5:2024, 7.3.2 applies with the following additions: the requirement in ISO 19085-5:2024, 7.3.2 j) related to the design specifications for manufacturing the protective device for grooving with the saw blade in machines with riving knife mounted saw blade guard, also applies to grooving with milling tools.

For machines incorporating a table saw unit, ISO 19085-9:2024, 7.3.2 applies with the following additions: the requirement in ISO 19085-9:2024, 7.3.2 i) related to the design specifications for manufacturing the protective device for grooving with the saw blade in machines with riving knife mounted saw blade guard, also applies to grooving with milling tools.

For machines incorporating a moulding unit, ISO 19085-6:2024, 7.3.2 applies.

For machines incorporating a planing unit, ISO 19085-7:2024, 7.3.2 applies with the following additions.

For machines with a removable rear guard of the fence for the surface planing unit, instructions shall be given to store the removable rear guard in the dedicated place and to remount it before operating the planing unit again.

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Annex A
(informative)

List of significant hazards

ISO 19085-1:2021, Annex A is replaced by the following text.

[Table A.1](#) lists all significant hazards, hazardous situations and events (see ISO 12100:2010), identified by risk assessment as significant for combined machines, and which require action to eliminate or reduce the risk.

Table A.1 — List of significant hazards

No.	Hazards, hazardous situations and hazardous events	Subclause of ISO 12100:2010	Subclause of this document
1	Mechanical hazards related to		
	— machine parts or workpieces due to		
	a) shape	6.2.2.1, 6.2.2.2, 6.3	5.3 , 5.6 , 5.10 , 6.15 , 7.2 , 7.3
	b) relative location		4.2 , 5.6 , 6.5 , 7.2
	c) mass and stability (potential energy of elements which can move under effect of gravity)		4.9
	d) mass and velocity (kinetic energy of elements in controlled or uncontrolled motion)		4.3 , 4.8 , 5.4 , 5.6 , 5.10
	e) mechanical strength		5.9
	— Accumulation of energy inside the machinery due to liquids and gases under pressure	6.2.10, 6.3.5.4	4.8 , 6.7 , 6.13
1.1	Crushing hazard		4.14 , 5.4 , 5.6 , 5.8 , 5.10 , 6.13
1.2	Shearing hazard		4.14 , 5.4 , 5.6 , 5.10 , 6.13
1.3	Cutting or severing hazard		4.3 , 4.5 , 4.8 , 5.3 , 5.4 , 5.6 , 6.13
1.4	Entanglement hazard		4.4 , 4.5 , 5.6 , 5.10 , 6.13
1.5	Drawing-in or trapping hazard		4.3 , 4.4 , 4.5 , 5.4 , 5.6 , 5.10 , 6.13
1.6	Impact hazard		4.11 , 5.10
1.9	High pressure fluid injection or ejection hazard		5.9 , 6.8 , 6.13
2	Electrical hazards due to		
2.1	Contact of persons with live parts (direct contact)	6.2.9, 6.3.5.4	6.4 , 6.13
2.2	Contact of persons with parts which have become live under faulty conditions (indirect contact)	6.2.9	6.4 , 6.13
2.4	Electrostatic phenomena	6.2.9	6.11
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	6.2 , 7.1 , 7.3
4.2	Accidents due to interference with speech communication, acoustic signals		
6	Hazards generated by radiation		
6.5	Laser	6.3.4.5	6.10
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, 6.2.4	6.3 , 7.3
7.2	Fire hazard	6.2.4	6.1
8	Hazards generated by neglecting ergonomic principles in machinery design		

Table A.1 (continued)

No.	Hazards, hazardous situations and hazardous events	Subclause of ISO 12100:2010	Subclause of this document
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	4.2 , 6.5
8.2	Hand-arm or foot-leg anatomy	6.2.8.3	6.5
8.4	Local lighting	6.2.8.6	6.6 , 7.3
8.5	Mental overload and underload, stress	6.2.8.5	7.3
8.6	Human error, human behaviour	6.2.8, 6.2.11.8, 6.2.11.10, 6.3.5.2, 6.4	7.3
8.7	Design, location or identification of manual controls	6.2.8 f), 6.2.11.8	4.2
8.8	Design or location of visual display units	6.2.8, 6.4.2	4.2
9	Combination of hazards	6.3.2.1	4.3 , 4.4 , 4.7 , 4.8 , 5.6 , 6.13 , 6.14
10	Unexpected start-up, unexpected overrun/overspeed (or any similar malfunction) from		
10.1	Failure/disorder of the control system	6.2.11, 6.3.5.4	4.1
10.2	Restoration of energy supply after an interruption	6.2.11.4	4.8 , 6.7
10.3	External influences on electrical equipment	6.2.11.11	4.1 , 6.9
10.4	Other external influences (gravity)	6.2.12.2	5.10
10.5	Errors in the software	6.2.11.7	4.1 , 4.14
10.6	Errors made by the operator (due to a mismatch of machinery with human characteristics and abilities; see 8.6)	6.2.8, 6.2.11.8, 6.2.11.10, 6.3.5.2, 6.4	4.2 , 6.5 , 7.3
11	Impossibility of stopping the machine in the best possible conditions	6.2.11.1, 6.2.11.3, 6.3.5.2	4.4 , 4.5 , 6.13
12	Variation in the rotational speed of tools	6.2.2.2, 6.3.3	4.7
13	Failure of the power supply	6.2.11.1, 6.2.11.4	4.8
14	Failure of the control circuit	6.2.11, 6.3.5.4	4.1
15	Errors of fitting	6.2.7, 6.4.5	6.12
16	Break-up during operation	6.2.3	5.2 , 5.9
17	Falling or ejected objects or fluids	6.2.3, 6.2.10	4.8 , 7.3
18	Loss of stability/overturning of machinery	6.3.2.6	5.1

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Annex B (informative)

Performance level required

For machines incorporating a dimension saw unit, ISO 19085-5:2024, Annex B applies.

For machines incorporating a table saw unit, ISO 19085-9:2024, Annex B applies.

For machines incorporating a moulding unit, ISO 19085-6:2024, Annex B applies.

For machines incorporating a planing unit, ISO 19085-7:2024, Annex B applies.

[Table B.1](#) summarizes the performance level required for those safety functions that are added specific to this document.

Table B.1 — Safety functions and performance level required

Area	No.	Safety function/device	PL _r	Subclause of this document
Start	1	Prevention of simultaneous operation of more than one working unit	c	4.3.1
Mode	2	Tenoning-sawing mode selection	c	4.6

Annex C
(normative)

Stability test

ISO 19085-1:2021, Annex C applies with the following additions.

As an exception, for machines incorporating a dimension saw unit and a moulding saw unit only, ISO 19085-5:2024, Annex C applies.

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Annex D
(normative)

Test for braking function

ISO 19085-1:2021, Annex D applies.

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Annex E
(normative)

Impact test for guards

ISO 19085-1:2021, Annex E applies.

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