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

Machines à bois — Sécurité —

Partie 11: Machines combinées

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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*.

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.

This document is intended to be used in conjunction with ISO 19085-1:2017, which gives requirements common to different machine types and with ISO 19085-5:2017, ISO 19085-6:2017, ISO 19085-7:2019 and ISO 19085-9:2019, which give requirements specific for the integrated working units.

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 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 this document, safety requirements are referenced to the relevant sections of ISO 19085-1:2017, ISO 19085-5:2017, ISO 19085-6:2017, ISO 19085-7:2019 and ISO 19085-9:2019 to avoid repetition and reduce their length.

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

[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 847-1:2017 and EN 847-2:2017.

Woodworking machines — Safety —

Part 11: Combined machines

1 Scope

This document gives the safety requirements and measures for stationary and displaceable combined woodworking machines, having at least two separately usable working units and with manual loading and unloading of the workpiece, hereinafter referred to as “machines”. The integrated working units can be of these types only:

- a sawing unit;
- a moulding unit;
- a planing unit.

The machines are designed to cut solid wood and material with similar physical characteristics to wood.

NOTE 1 For the definitions of stationary and displaceable machines, see ISO 19085-1:2017, 3.4 and 3.5.

This document 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 2 For relevant but not significant hazards, e.g. sharp edges of the machine frame, see ISO 12100:2010.

This document does apply to machines also equipped with the devices/additional working units listed in the Scopes of ISO 19085-5:2017, ISO 19085-6:2017, ISO 19085-7:2019 and ISO 19085-9:2019.

This document does not apply to:

- a) machines incorporating only a planing unit and a mortising device;

NOTE 3 Such machines are dealt with in ISO 19085-7:2019.

- 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 date of its publication as an International Standard.

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 19085-11:2020(E)

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

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

ISO 19085-5:2017, *Woodworking machines — Safety — Part 5: Dimension saws*

ISO 19085-6:2017, *Woodworking machines — Safety — Part 6: Single spindle vertical moulding machines ("toupies")*

ISO 19085-7:2019, *Woodworking machines — Safety — Part 7: Surface planing, thickness planing, combined surface/thickness planing machines*

ISO 19085-9:2019, *Woodworking machines — Safety — Part 9: Circular saw benches (with and without sliding table)*

IEC 61800-5-2:2016, *Adjustable speed electrical power drive systems — Part 5-2: Safety requirements — Functional*

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, ISO 19085-5:2017, ISO 19085-6:2017, ISO 19085-7:2019, ISO 19085-9:2019 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 <http://www.electropedia.org/>

3.1 combined machine
machine incorporating two or more separately usable working units, i.e. a *sawing unit* (3.2), a *moulding unit* (3.5) and/or a *planing unit* (3.6)

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

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

Note 3 to entry: See examples of such machines 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 dimension saws, see ISO 19085-5:2017, 3.1.

3.4 table saw unit

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

Note 1 to entry: For the definition of table saws, also called circular saw benches, see ISO 19085-9:2019, 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 single spindle vertical moulding machines, see ISO 19085-6:2017, 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 combined surface/thickness planing machines, see ISO 19085-7:2019, 3.4.

3.7 tenoning-sawing mode

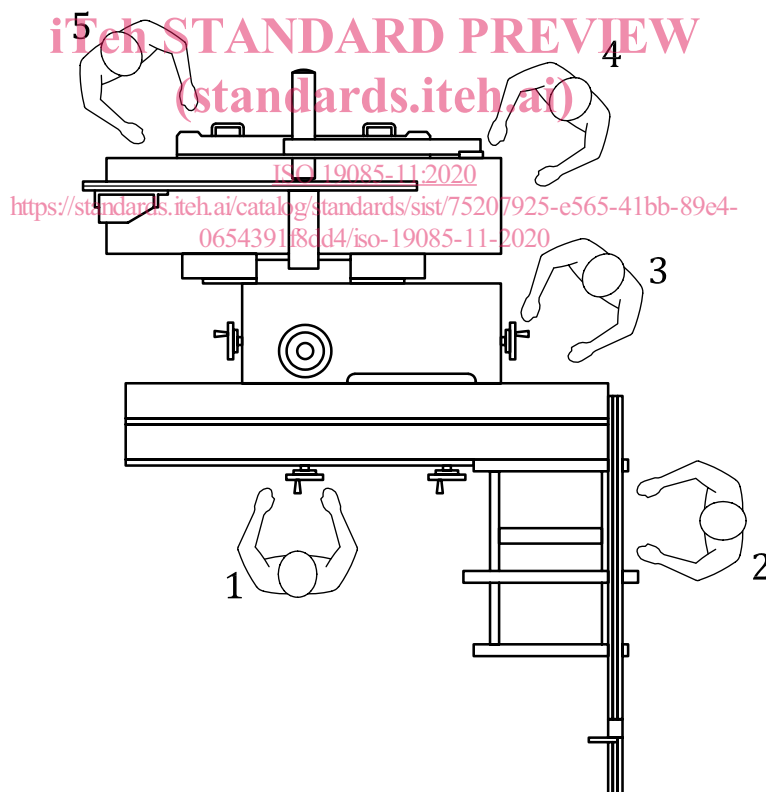
use of the *sawing unit* (3.2) and *moulding unit* (3.5) simultaneously to produce tenons

Note 1 to entry: For workpiece support, these machines are equipped with a movable workpiece support, e.g. sliding table, with workpiece clamping arrangements.

3.8 workstation position

position to operate a working unit

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



Key

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

Figure 1 — Typical workstation positions

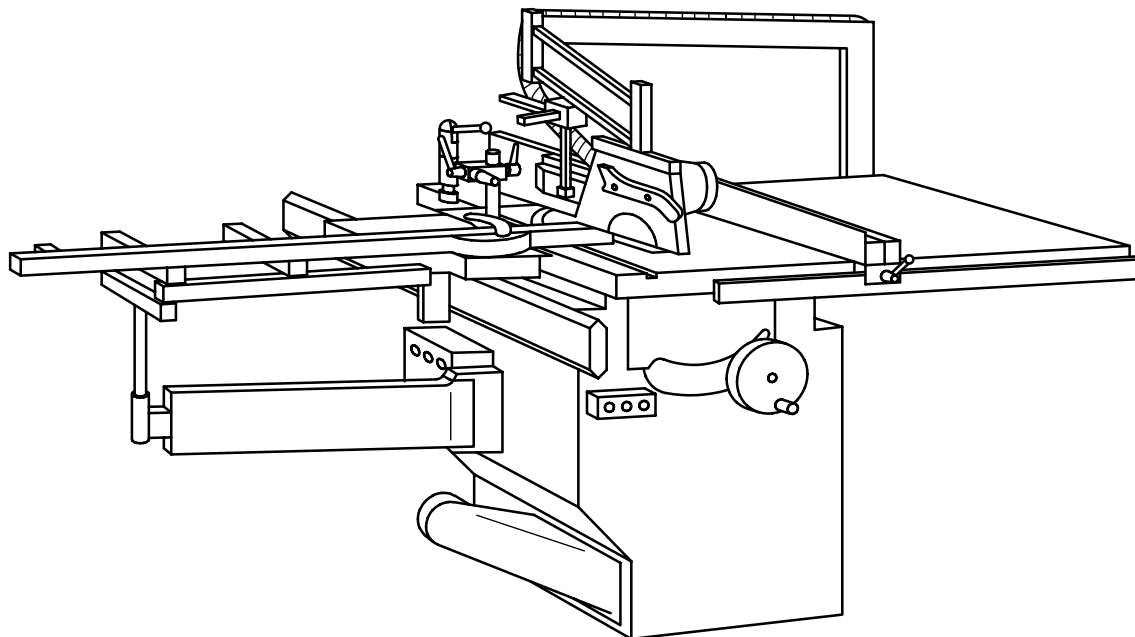


Figure 2 — Example of a machine with table saw and moulding units, fitted with a sliding table

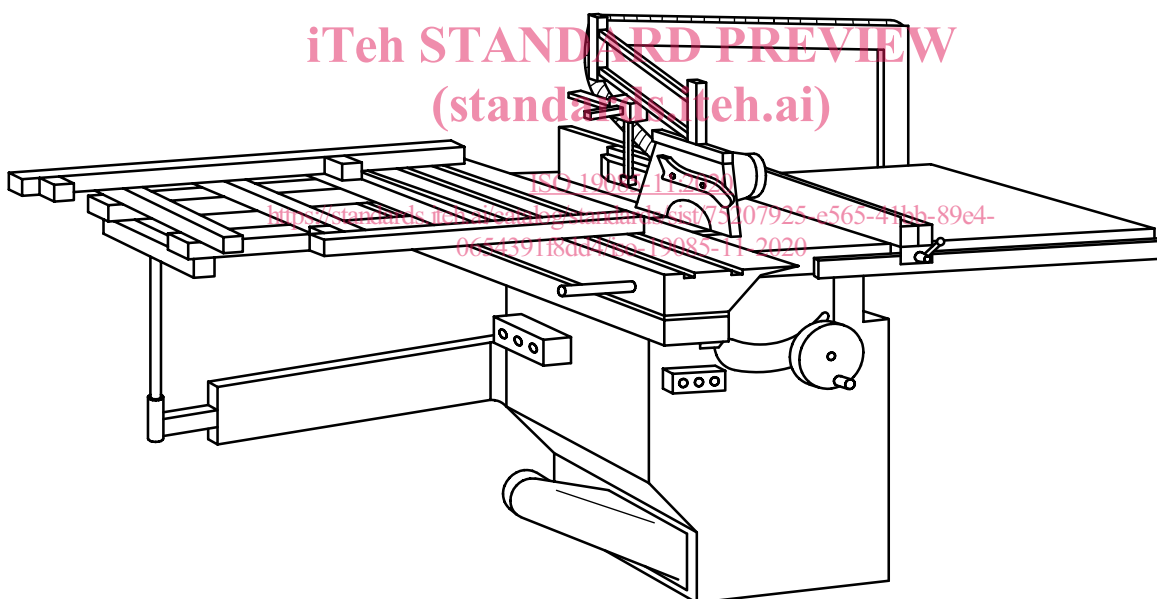


Figure 3 — Example of a machine with dimension saw and moulding units

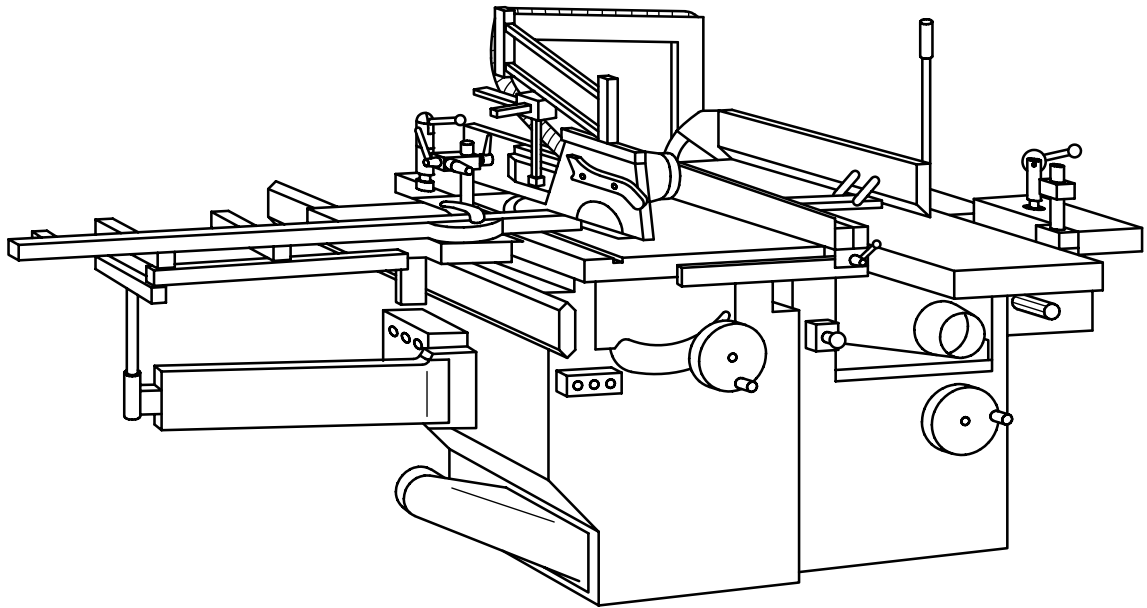


Figure 4 — Example of a machine with table saw, moulding and planing units, with a mortising device, fitted with a sliding table

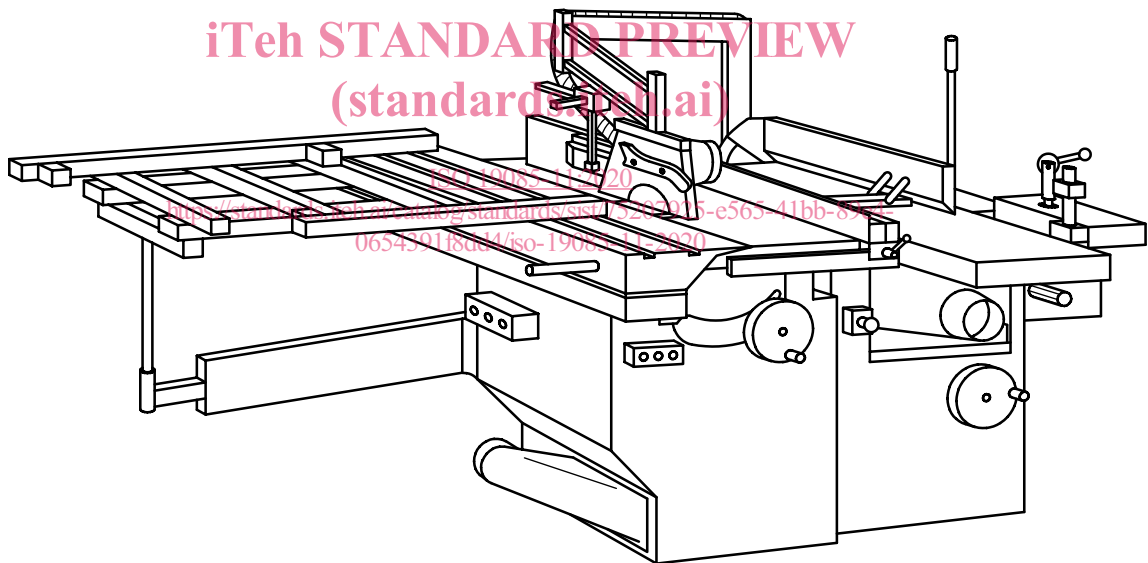


Figure 5 — Example of a machine with dimension saw, moulding and planing units, with a mortising device

4 List of significant hazards

This clause contains all significant hazards, hazardous situations and events (see ISO 12100:2010), identified by risk assessment as significant for the machines as defined in [Clause 1](#) 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 hazardous events	ISO 12100:2010	Relevant section 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	6.3 , 6.9.2 , 6.10 , 6.6 , 6.8 , 7.5 , 7.14
	b) relative location		5.2 , 6.9.2 , 6.10 , 6.6 , 6.8
	e) mechanical strength		6.2 , 6.3 , 6.4 , 6.9.2 , 6.10 , 6.6 , 6.9 , Annex A , Annex E , Annex E , Annex H , Annex I
	— Accumulation of energy inside the machinery due to		
f) elastic elements (springs)	6.2.10, 6.3.5.4	6.3	
1.1	Crushing hazard		5.3 , 5.4.2 , 5.4.4 , 6.4 , 6.9.2 , 6.6 , 6.8 , 6.11 , 7.13 , 8.3
1.2	Shearing hazard		5.3 , 5.4.2 , 5.4.4 , 6.4 , 6.9.2 , 6.6 , 6.8 , 6.11 , 7.13 , 8.3
1.3	Cutting or severing hazard		5.3 , 5.4.2 , 5.4.4 , 6.4 , 6.6 , 6.11 , 7.13 , 8.3
1.4	Entanglement hazard		5.3 , 5.4.2 , 5.4.4 , 6.4 , 6.6 , 7.13 , 8.3
1.5	Drawing-in or trapping hazard		5.3 , 5.4.2 , 5.4.4 , 6.4 , 6.6 , 7.13 , 8.3
1.8	Friction or abrasion hazard		5.3 , 5.4.2 , 5.4.4 , 6.4 , 6.6 , 7.13 , 8.3
2	Electrical hazards due to	ISO 19085-11:2020	
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
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 , 8.3
4.2	Accidents due to interference with speech communication, acoustic signals		
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	7.3 , 8.3
7.2	Fire hazard	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	6.2.8.3	7.5
8.4	Local lighting	6.2.8.6	8.3
8.5	Mental overload and underload, stress	6.2.8.5	8.3
8.6	Human error, human behaviour	6.2.8, 6.2.11.8, 6.2.11.10, 6.3.5.2, 6.4	8.3
8.7	Design, location or identification of manual controls	6.2.8.f, 6.2.11.8	5.2