



BSI Standards Publication

Woodworking machines — Safety

Part 12: Tenoning/profiling machines

National foreword

This British Standard is the UK implementation of EN ISO 19085-12:2021+A11:2023. It is derived from ISO 19085-12:2021. It supersedes BS EN 1218-1:1999+A1:2009, BS EN 1218-2:2004+A1:2009, BS EN 1218-5:2004+A1:2009 and BS EN ISO 19085-12:2021, which are withdrawn.

The start and finish of text introduced or altered by amendment A11 is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A11 is indicated by A11 A11.

The UK participation in its preparation was entrusted to Technical Committee MTE/23, Woodworking machines.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

This publication has been prepared under a mandate given to the European Standards Organizations by the European Commission and the European Free Trade Association. It is intended to support requirements of the EU legislation detailed in the European Foreword. A European Annex, usually Annex ZA or ZZ, describes how this publication relates to that EU legislation.

For the Great Britain market (England, Scotland and Wales), if UK Government has designated this publication for conformity with UKCA marking (or similar) legislation, it may contain an additional National Annex. Where such a National Annex exists, it shows the correlation between this publication and the relevant UK legislation. If there is no National Annex of this kind, the relevant Annex ZA or ZZ in the body of the European text will indicate the relationship to UK regulation applicable in Great Britain. References to EU legislation may need to be read in accordance with the UK designation and the applicable UK law. Further information on designated standards can be found at www.bsigroup.com/standardsandregulation.

For the Northern Ireland market, UK law will continue to implement relevant EU law subject to periodic confirmation. Therefore Annex ZA/ZZ in the European text, and references to EU legislation, are still valid for this market.

UK Government is responsible for legislation. For information on legislation and policies relating to that legislation, consult the relevant pages of www.gov.uk.

© The British Standards Institution 2023
Published by BSI Standards Limited 2023

ISBN 978 0 539 26561 3

ICS 13.110; 79.120.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 May 2021.

Amendments/corrigenda issued since publication

Date	Text affected
30 April 2023	Implementation of CEN amendment A11:2023

English Version

Woodworking machines - Safety - Part 12: Tenoning/profiling machines (ISO 19085-12:2021)

Machines à bois - Sécurité - Partie 12: Machines à
tenonner/profiler (ISO 19085-12:2021)

Holzbearbeitungsmaschinen - Sicherheit - Teil 12:
Zapfenschneid- und
Schlitzmaschinen/Profiliermaschinen (ISO 19085-
12:2021)

This amendment A11 modifies the European Standard EN ISO 19085-12:2021; it was approved by CEN on 21 December 2022.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN ISO 19085-12:2021/A11:2023) has been prepared by Technical Committee CEN/TC 142 “Woodworking machines - Safety” the secretariat of which is held by UNI.

This Amendment to the European Standard EN ISO 19085-12:2021 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2023, and conflicting national standards shall be withdrawn at the latest by September 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directives.

For relationship with EU Directives, see informative Annex ZA, which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



Annex ZA (informative)

Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered

This European standard has been prepared under a Commission's standardisation request "M/396 Mandate to CEN and CENELEC for standardisation in the field of machinery" to provide one voluntary means of conforming to essential requirements of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast).

Once this standard is cited in the Official Journal of the European Union under that Directive 2006/42/EC, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard with Annex I of Directive 2006/42/EC

The relevant Essential Requirements of Directive 2006/42/EC	Clauses/sub-clauses of this EN	Remarks/Notes
1.1.2 Principles of safety integration		
a) fitted for its function	Clauses 5, 6, 7, 8	
c) intended use and reasonably foreseeable misuse	Clauses 5, 6, 7, 8	
d) constraints in use	Clauses 5, 6, 7, 8	
1.1.3 Materials and products		Not covered
1.1.4 Lighting		Not covered
1.1.5 Design of machinery to facilitate its handling	7.5	
1.1.6 Ergonomics	7.5	
1.1.7 Operating position	5.2	
1.2.1 Safety and reliability of control systems		Not covered
1.2.2 Control devices	5.2, 5.3, 5.4, 5.6, 5.7	
1.2.3 Starting	5.3	
1.2.4 Stopping	5.4, 5.5, 6.4	
1.2.5 Selection of control or operating mode	5.6	
1.2.6 Failure of the power supply	5.8, 7.7, 7.8, 7.15	
1.3.1 Risk of loss of stability	6.1, 8.3	
1.3.2 Risk of break-up during operation		Not covered
1.3.3 Risks due to falling or ejected objects	6.2, 6.3, 6.5, 6.8, 6.9, 8.3	
1.3.6 Risks relating to variations in the operating conditions	5.7, 6.6	
1.3.7 Risks related to moving parts	6.5, 6.6, 6.7, 6.8, 8.3	
1.3.8 Choice of protection against risks related to moving parts	6.6, 6.7, 6.8	

1.3.8.1 Moving transmission parts	6.6.3, 6.6.4, 6.7	
1.3.8.2 Moving parts involved in the process	6.6.1, 6.6.2	
1.3.9 Risk of uncontrolled movements		Not covered
1.4.1 General requirements	6.9	
1.4.2.1 Fixed guards	6.5.1	
1.4.2.2 Interlocking movable guards	6.5.2	
1.4.3 Special requirements for protective devices	6.5.3, 6.5.5, 6.5.6	
1.5.1 Electricity supply	7.4, 7.13	
1.5.2 Static electricity	7.11	
1.5.3 Energy supply other than electricity	7.7, 7.8	
1.5.4 Errors of fitting	7.12	
1.5.5 Extreme temperatures	7.15	
1.5.6 Fire	7.1	
1.5.8 Noise	7.2	
1.5.11 External radiation	7.9	
1.5.12 Laser equipment	7.10	
1.5.13 Emission of hazardous materials and substances	7.3, 7.16	
1.6.1 Machinery maintenance	7.14, 8.3	
1.6.2 Access to operating position and servicing points	7.14, 8.3	
1.6.3 Isolation of energy sources	7.13, 8.3	
1.6.4 Operator intervention	7.14, 8.3	
1.6.5 Cleaning of internal parts	7.14, 8.3	
1.7.1 Information and warnings on the machinery	7.10, 8.1, 8.2	
1.7.2 Warning devices		Not covered
1.7.3 Marking of machinery	8.2	
1.7.4 Instructions	7.10, 8.3	
2.3 Machinery for working wood and analogous materials		
a) guiding		Not covered
b) ejection		Not covered
c) brake	5.5, 6.4	
d) accidental tool contact		Not covered

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard. A11

Contents

Page

Foreword	vi
Introduction	vii
1 Scope	1
2 Normative references	2
3 Terms and definitions	3
4 List of significant hazards	12
5 Safety requirements and measures for controls	14
5.1 Safety and reliability of control systems	14
5.2 Control devices	14
5.2.1 General	14
5.2.2 Additional requirements for single end tenoning machines with manual feed sliding table	14
5.2.3 Additional requirements for single end tenoning machines with mechanical feed sliding table	14
5.2.4 Additional requirements for single end tenoning and/or profiling machines with mechanical feed	14
5.2.5 Additional requirements for double end machines	15
5.2.6 Additional requirements for angular systems for tenoning and profiling with mechanical feed	15
5.3 Start	15
5.3.1 Machines with manual feed	15
5.3.2 Machines with mechanical feed	15
5.3.3 Laser marking unit	16
5.4 Safe stops	16
5.4.1 General	16
5.4.2 Normal stop	16
5.4.3 Operational stop	17
5.4.4 Emergency stop	17
5.5 Braking function of tool spindles	17
5.6 Mode selection	17
5.6.1 General	17
5.6.2 Adjustment mode (MODE 2)	17
5.7 Spindle speed changing	18
5.7.1 Spindle speed changing by changing belts on the pulleys	18
5.7.2 Spindle speed changing by incremental speed change motor	18
5.7.3 Infinitely variable speed by frequency inverter	18
5.8 Failure of any power supply	18
5.9 Manual reset control	18
5.10 Enabling control	18
5.11 Machine moving parts limited speed monitoring	18
5.12 Time delay	18
5.13 Tele-service	19
6 Safety requirements and measures for protection against mechanical hazards	19
6.1 Stability	19
6.1.1 Stationary machines	19
6.1.2 Displaceable machines	19
6.2 Risk of break-up during operation	19
6.3 Tool holder and tool design	20
6.3.1 General	20
6.3.2 Spindle locking	20
6.3.3 Circular saw blade fixing devices	20
6.3.4 Flange dimensions for circular saw blades	20

6.3.5	Spindle rings.....	20
6.4	Braking.....	21
6.4.1	Braking of tool spindle.....	21
6.4.2	Maximum run-down time.....	21
6.4.3	Brake release.....	21
6.5	Safeguards.....	21
6.5.1	Fixed guards.....	21
6.5.2	Interlocking moveable guards.....	21
6.5.3	Hold-to-run control.....	21
6.5.4	Two hand control.....	21
6.5.5	Electro-sensitive protective equipment (ESPE).....	22
6.5.6	Pressure sensitive protective equipment (PSPE).....	22
6.6	Prevention of access to moving parts.....	22
6.6.1	General.....	22
6.6.2	Guarding of tools.....	22
6.6.3	Guarding of drives.....	27
6.6.4	Guarding of shearing and/or crushing zones.....	28
6.7	Impact hazard.....	33
6.8	Clamping devices.....	33
6.8.1	Single end tenoning machines with sliding table.....	33
6.8.2	Machines other than single end tenoning machines with sliding table.....	33
6.9	Measures against ejection.....	34
6.9.1	General.....	34
6.9.2	Guards materials and characteristics.....	34
6.9.3	Devices to minimize the possibility or effect of ejection or kickback.....	34
6.10	Work-piece support and guides.....	36
6.10.1	Single end tenoning machines with sliding table.....	36
6.10.2	Single end tenoning and/or profiling machines with mechanical feed.....	36
6.10.3	Double end tenoning and/or profiling machines with mechanical feed.....	37
6.10.4	Angular systems for tenoning and profiling with mechanical feed.....	37
6.10.5	Work-piece returner.....	37
7	Safety requirements and measures for protection against other hazards.....	38
7.1	Fire.....	38
7.2	Noise.....	39
7.2.1	Noise reduction at the design stage.....	39
7.2.2	Noise emission measurement.....	39
7.3	Emission of chips and dust.....	39
7.4	Electricity.....	39
7.4.1	General.....	39
7.4.2	Displaceable machines.....	39
7.5	Ergonomics and handling.....	39
7.6	Lighting.....	40
7.7	Pneumatics.....	40
7.8	Hydraulics.....	40
7.9	Electromagnetic compatibility.....	40
7.10	Laser.....	40
7.11	Static electricity.....	40
7.12	Errors of fitting.....	40
7.13	Isolation.....	40
7.14	Maintenance.....	41
7.15	Heat.....	41
7.16	Substances.....	41
8	Information for use.....	41
8.1	Warning devices.....	41
8.2	Marking.....	41
8.2.1	General.....	41
8.2.2	Additional markings.....	41

8.3	Instruction handbook	42
8.3.1	General	42
8.3.2	Additional information	42
Annex A	(informative) Performance levels required	44
Annex B	(normative) Tests for braking function	46
Annex C	(normative) Stability test for displaceable machines	47
Annex D	(normative) Impact test for guards	48
Annex E	(normative) Noise emission measurement for single end profiling machines (not in ISO 7960:1995)	49
Bibliography		53

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 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.

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 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

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:

- “ISO 19085-1:2017, [subclause/Annex], applies.”;
- “ISO 19085-1:2017, [subclause/Annex], applies with the following additions.” or “ISO 19085-1:2017, [subclause/Annex], applies with the following additions, subdivided into further specific subclauses.”;
- “ISO 19085-1:2017, [subclause/Annex], does not apply.”;
- “ISO 19085-1:2017, [subclause/Annex], is replaced by the following text.” or “ISO 19085-1:2017, [subclause/Annex], 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/Annex specific to this document.”.

[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 847-1:2017 and EN 847-2:2017. Requirements for tool clamping devices are given in EN 847-3:2013.

Woodworking machines — Safety —

Part 12: Tenoning/profiling machines

1 Scope

This document gives the safety requirements and measures for stationary, manually loaded and unloaded:

- single end tenoning machines with manual feed sliding table;
- single end tenoning machines with mechanical feed sliding table;
- single end tenoning and/or profiling machines with mechanical feed;
- double end tenoning and/or profiling machines with mechanical feed, also designed to be automatically loaded/unloaded;
- angular systems for tenoning and profiling with mechanical feed;

with maximum work-piece height capacity of 200 mm for single end machines and 500 mm for double end machines, hereinafter referred to as “machines”.

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

The machines are designed to process in one pass one end or two sides, either opposite or perpendicular to each other, of work-pieces made of:

- 1) solid wood;
- 2) materials with similar physical characteristics to wood (see ISO 19085-1:2017, 3.2);
- 3) fibre-cement, rock/glass wool, gypsum, plasterboard, only with machines with mechanical feed.

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

- sanding units;
- fixed or movable work-piece support;
- automatic tool changing;
- automatic work-piece returner;
- glass bead saw unit;
- hinge recessing unit;
- post forming edge pre-cutting;
- boring unit;

- dynamic processing unit;
- sawing unit installed out of the integral enclosure, between machine halves in double end machines;
- foiling unit;
- coating unit;
- grooving unit with milling tool installed out of the integral enclosure, between machine halves;
- brushing unit;
- gluing unit;
- sealing unit;
- dowels inserting unit;
- tongues inserting unit;
- inkjet marking unit;
- laser marking unit;
- labelling unit;
- work-piece back-up device (anti-chipping / anti-splintering device);
- quick tool changing system.

This document does not deal with any hazards related to:

- a) systems for automatic loading and unloading of the work-piece to a single machine other than automatic work-piece returner;
- b) single machine being used in combination with any other machine (as part of a line);
- c) use of tools, other than saw blades or milling tools for grooving, installed between machine halves and out of the integral enclosure in double end machines;
- d) use of tools protruding out of the integral enclosure;
- e) chemical characteristics of fibre-cement, rock/glass wool, gypsum, plasterboard and their dust.

It is not applicable to machines intended for use in potentially explosive atmosphere nor to machines manufactured prior to 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 286-2:2010, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 2: Tables of standard tolerance classes and limit deviations for holes and shafts*

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 13856-2:2013, *Safety of machinery — Pressure-sensitive protective devices — Part 2: General principles for design and testing of pressure-sensitive edges and pressure-sensitive bars*

ISO 13857:2019, *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*

IEC 60825-1:2014, *Safety of laser products - Part 1: Equipment classification and requirements*

IEC 61310-1:2007, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals*

EN 847-1:2017, *Tools for woodworking — Safety requirements — Part 1: Milling tools, circular saw blades*

EN 847-2:2017, *Tools for woodworking — Safety requirements — Part 2: Requirements for the shank of shank mounted milling tools/circular saw blades*

EN 847-3:2013, *Tools for woodworking — Safety requirements — Part 3: Clamping devices*

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 <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

single end tenoning machine with manual feed sliding table

machine designed for the production of *tenons* (3.10) on one end of a work-piece during one cycle where the tenon is cut by means of milling tools and saw blades mounted on one or more spindles and with manual feed sliding table supporting the work-piece during processing

Note 1 to entry: See [Figure 1](#) for an example.

3.2

single end tenoning machine with mechanical feed sliding table

machine designed for the production of *tenons* (3.10) on one end of a work-piece during one cycle where the tenon is cut by means of milling tools and saw blades mounted on one or more spindles, with mechanical feed sliding table and with one operator position for both loading and unloading

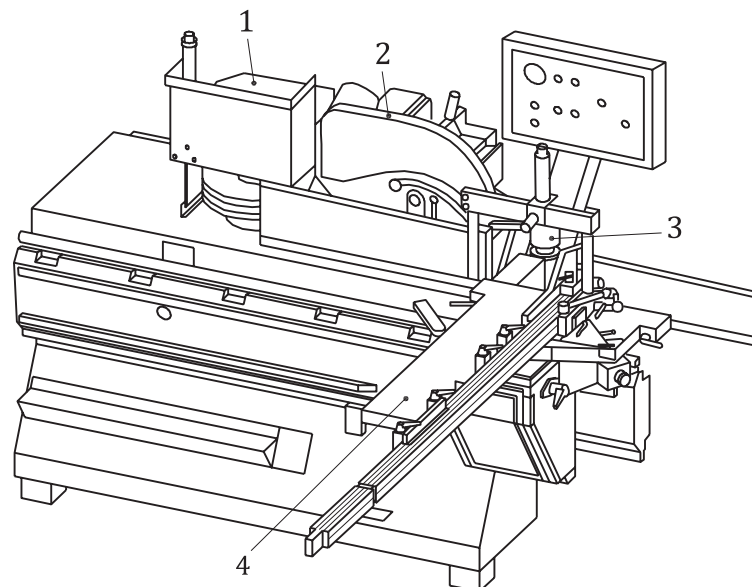
Note 1 to entry: See [Figure 2](#) for an example.

3.3

single end tenoning and/or profiling machine with mechanical feed

machine designed for production of *tenons* (3.10) and/or profiles on one side of the work-piece in one pass

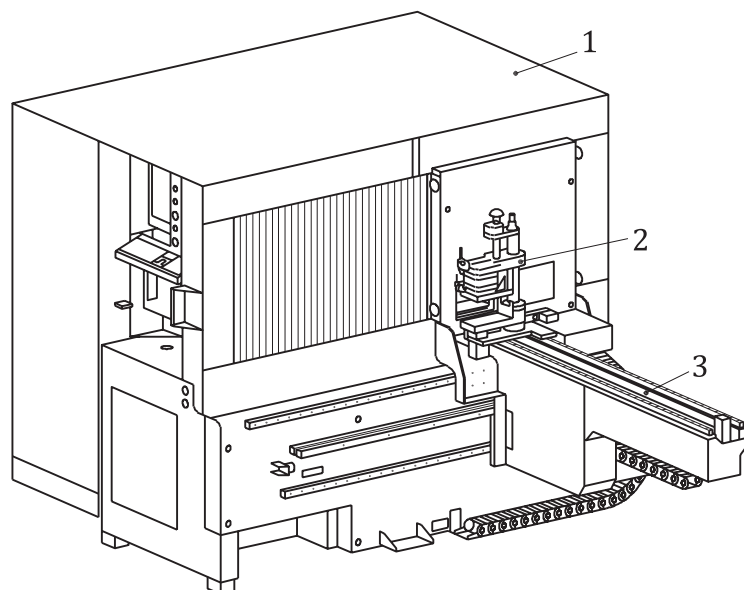
Note 1 to entry: This machine is also known as “shaper-sander” or “shape and sand machine” (e.g. in North America). See [Figure 3](#) for an example.



Key

- | | | | |
|---|------------------------|---|----------------------------|
| 1 | milling tool enclosure | 3 | work-piece clamping device |
| 2 | saw blade enclosure | 4 | manual feed sliding table |

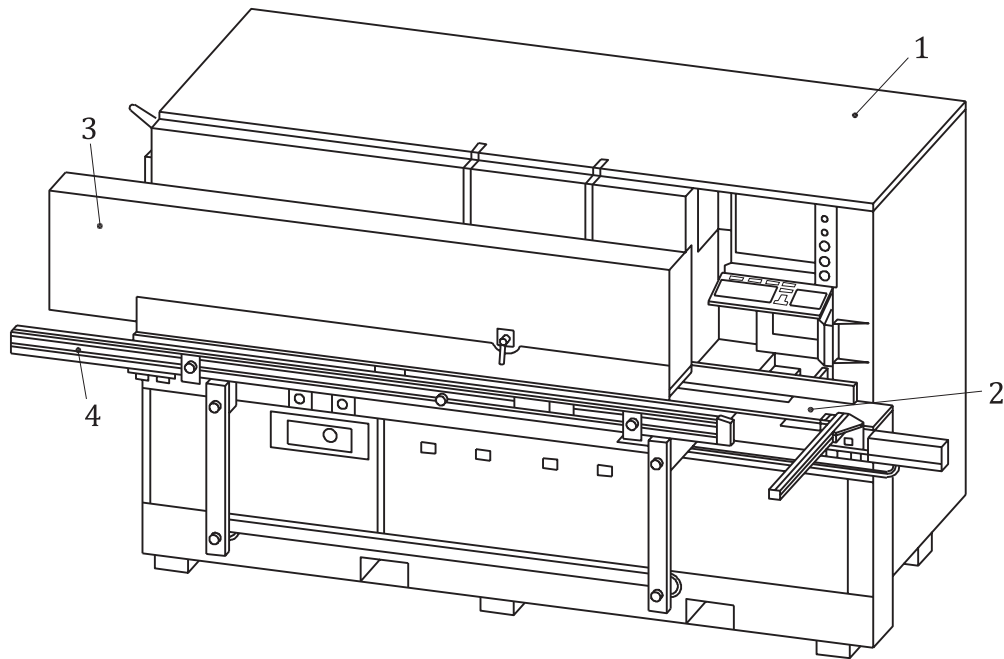
Figure 1 — Example of a single end tenoning machine with manual feed sliding table



Key

- | | |
|---|-------------------------------|
| 1 | tools enclosure |
| 2 | work-piece clamping device |
| 3 | mechanical feed sliding table |

Figure 2 — Example of a single end tenoning machine with mechanical feed sliding table



Key

- | | | | |
|---|--------------------|---|---|
| 1 | tools enclosure | 3 | power-driven upper feed-rollers enclosure |
| 2 | work-piece support | 4 | adjustable work-piece support |

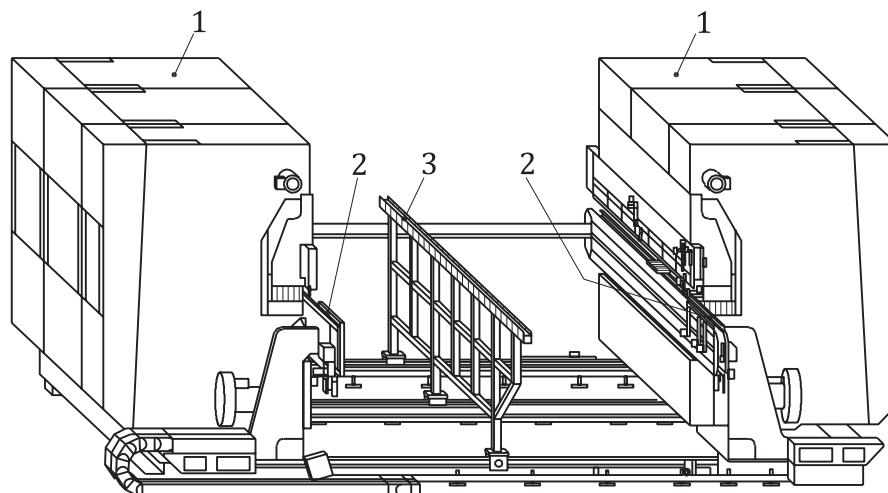
Figure 3 — Example of a single end profiling machine with mechanical feed

3.4

double end tenoning and/or profiling machine with mechanical feed

machine primarily designed for production of *tenons* (3.10) and/or profiles on opposing sides of a work-piece in one pass

Note 1 to entry: See [Figure 4](#) for an example.



Key

- | | | | |
|---|--------------------------|---|---------------------------------|
| 1 | machine half | 3 | intermediate work-piece support |
| 2 | work-piece feeding chain | | |

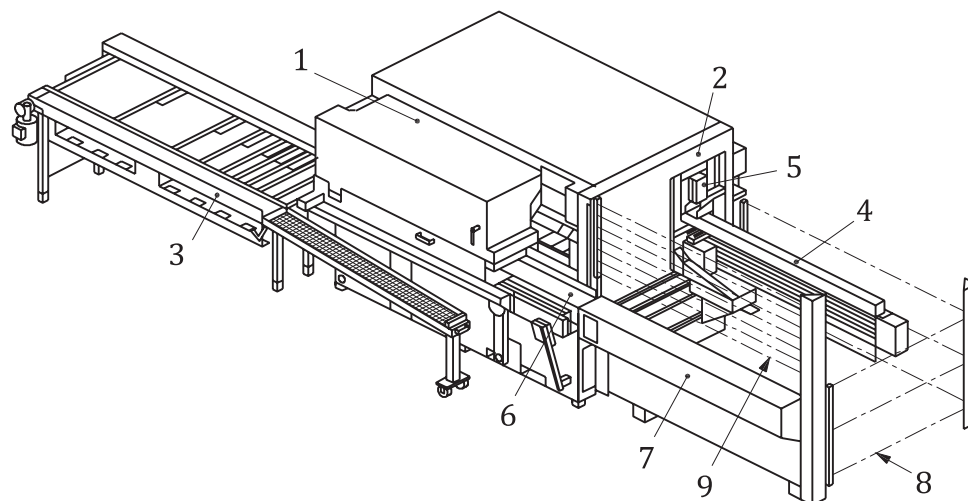
Figure 4 — Example of a double end tenoning and/or profiling machine fed by chains

3.5

angular system for tenoning and profiling with mechanical feed

combination of a *single end tenoning machine with mechanical feed sliding table* (3.2) and a *single end profiling machine with mechanical feed* (3.3) disposed in sequence perpendicularly to each other

Note 1 to entry: See [Figure 5](#) for an example. Transfer of work-piece from tenoning side to profiling side can be automatic or by the intervention of the operator.



Key

1	profiling unit	6	work-piece support
2	tenoning unit	7	fixed guard at loading/unloading position
3	automatic work-piece returner	8	AOPD 1
4	mechanical feed sliding table	9	AOPD 2
5	work-piece clamping device		

Figure 5 — Example of an angular tenoning and profiling system with mechanical feed

3.6

machine half

part of a machine consisting of a frame, working units, work-piece support and feeding system

Note 1 to entry: Each machine half processes one side of the work-piece. One or both machine halves are capable of being moved to accept work-pieces of different dimensions. Examples of feeding systems are chain beam and top pressure beam.

3.7

integral enclosure

guarding designed to fit close to the machine and provide a measure of sound attenuation and where certain setting adjustments can be available outside the enclosure

Note 1 to entry: Each machine half is provided with separate guarding and on the adjustable machine half/halves this guarding moves with it when adjustment is made for work-piece width.

3.8

complete enclosure

total machine enclosure primarily designed for noise attenuation and to permit the operator to move around freely within it and where all machine setting and adjustments are available inside it and access is normally through a door/opening

Note 1 to entry: The complete enclosure usually contains openings for work-piece loading and unloading. The openings are usually equipped with sound-absorbing sections, e.g. tunnels.

3.9**profiling**

shaping of an edge of a work-piece by milling tools, saw blades and/or sanding units

Note 1 to entry: Profiling also includes panel sizing.

3.10**tenon**

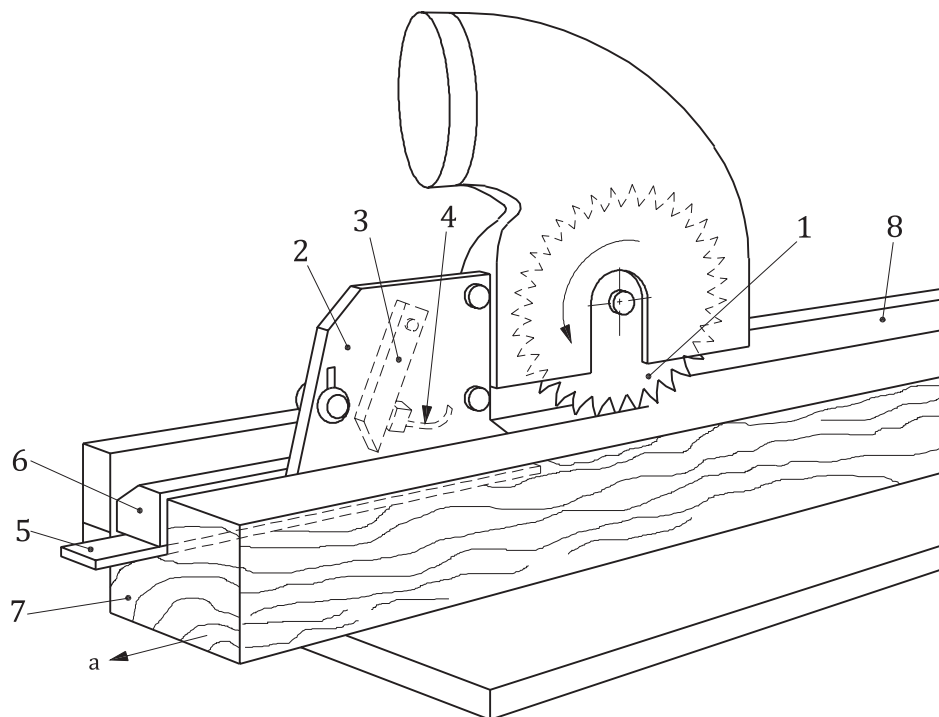
machined projection and slots on the end of a work-piece to facilitate the joining of work-pieces

Note 1 to entry: Profiled tenons are included.

3.11**glass bead saw unit**

work unit fitted with a tool, usually a saw blade, with or without coaxial mounted milling tool, to cut out a glass bead from the machined profile of the work-piece

Note 1 to entry: See [Figure 6](#) for an example.

**Key**

1	glass bead saw-blade	6	glass bead ledge
2	bed ledge separator	7	work-piece
3	anti-kickback finger	8	fence
4	pressure device	a	Feed direction.
5	guiding channel for glass bead ledge		

Figure 6 — Example of glass bed saw unit

3.12**hinge recessing unit**

work unit fitted with a milling tool to recess hinges for window fittings

Note 1 to entry: See [Figure 7](#) for an example. The tool spindle moves in a vertical or horizontal plane during processing and returns to its starting position ready for the following (succeeding) work-piece.