

Safety of woodworking machines — One side moulding machines with rotating tool —

Part 1: Single spindle vertical moulding machines

The European Standard EN 848-1:1998, with the incorporation of amendment A1:2000, has the status of a British Standard

ICS 79.120.10

National foreword

This British Standard is the English language version of EN 848-1:1998, including amendment A1:2000, published by the European Committee for Standardization (CEN).

The UK participation in its preparation was entrusted to Technical Committee MTE/23, Woodworking machines, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 142, Woodworking machines — Safety, the Secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 1999, and conflicting national standards shall be withdrawn at the latest by January 1999.

This European Standard 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 Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Organizations contributing to the preparation of this European Standard include the European Manufacturers' Association "EUMABOIS".

Normative and informative annexes to this standard are listed in the contents list.

The European Standards produced by CEN/TC 142 are particular to woodworking machines and complement the relevant A and B standards on the subject of general safety (see introduction of EN 292-1:1991 for a description of A, B and C standards).

Common requirements for tooling are given in EN 847-1:1997.

Foreword to amendment A1

This amendment EN 848:1998/A1:2000 to EN 848-1:1998 has been prepared by Technical Committee CEN/TC 142, Woodworking machines — Safety, the Secretariat of which is held by BSI.

This amendment to the European Standard EN 848-1:1998 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2001, and conflicting national standards shall be withdrawn at the latest by January 2001.

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This amendment clarifies the requirements on safeguarding equipment for curved work which is located at the end of Annex B, Rigidity tests for pressure pads, hand protector and guiding steady.

Contents

		Page
Foreword	2	
0 Introduction	5	
1 Scope	5	
2 Normative references	5	
3 Definitions and terminology	7	
3.1 Definitions	7	
3.2 Terminology	8	
4 List of hazards	13	
5 Safety requirements and/or measures	13	
5.1 Controls	13	
5.2 Protection against mechanical hazards	19	
5.3 Protection against non-mechanical hazards	30	
6 Information for use	33	
6.1 Warning devices	33	
6.2 Marking	33	
6.3 Instruction handbook	33	
Annex A (normative) Determination of maximum spindle speeds	35	
Annex B (normative) Rigidity test for pressure pads, hand protector and guiding steady	39	
Annex C (normative) Safe working practice	44	
Annex ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives	46	
Figure 1 — An example of straight work	9	
Figure 2 — An example of curved work	10	
Figure 3 — Examples of tenons	10	
Figure 4 — An example of stopped straight work	11	
Figure 5	12	
Figure 6 — Position of controls	18	
Figure 7 — Spindle ring set camming test configuration	22	
Figure 8 — Spindle: examples of tool fixing devices	23	
Figure 9 — Definition of table dimensions	25	
Figure 10 — Table rings	25	
Figure 11 — Examples of curved work guiding devices	27	
Figure 12 — An example of using pressure devices	27	
Figure 13 — An example of a spindle speed chart	34	
Figure A.1 — Definition of tool spindle dimensions		35
Figure A.2 — Speed chart for tool spindles with a diameter (d_1) of 30 mm and a useable length (l_1) of 140 mm		37
Figure A.3 — Speed chart for tool spindle with a diameter (d_1) of 40 mm and a useable length (l_1) of 160 mm		38
Figure A.4 — Speed chart for tool spindles with a diameter (d_1) of 50 mm and a useable length (l_1) of 160 mm		39
Figure B.1 — Definition of fence pressure pad deflection measuring point and directions of application of test forces (horizontal view)		40
Figure B.2 — Definition of fence pressure pad deflection measuring point and directions of application of test forces (vertical view)		40
Figure B.3 — Application of fence test force F and measurement of displacement f (vertical view)		41
Figure B.4 — Definition of table pressure pad deflection measuring points and directions of application of test forces (horizontal view)		41
Figure B.5 — Definition of table pressure pad deflection measuring points and directions of application of test forces (vertical view)		41
Figure B.6 — Definition of the adjustable guard deflection measuring points and directions of application of test forces		42
Figure B.7 — Definition of guiding steady deflection measuring points and directions of application of test forces		43
Table 1 — Main components of single spindle vertical moulding machines		9
Table 2 — List of hazards		16
Table 3 — Spindle dimensions		20
Table 4 — Sizes of table and table rings		24
Table B.1 — Fence and table pressure pad displacement requirements		40
Table B.2 — Adjustable guard deflection requirements		43
Table B.3 — Guiding steady deflection requirements		43

0 Introduction

This European Standard has been prepared to be a harmonized standard to provide one means of conforming to the essential safety requirements of the Machinery Directive, and associated EFTA Regulations. This European standard is a type “C” standard as defined in EN 292:1991

The extent to which hazards are covered is indicated in the scope of this standard.

The requirements of this standard concern designers, manufacturers, suppliers and importers of single spindle vertical moulding machines.

Electrically driven machines excluded from the scope of this standard are covered by the requirements of EN 61029-1:1996 or EN 50144-1:1995 and prEN 61029-2-8:1996.

This standard also includes information to be provided by the manufacturer to the user.

1 Scope

This European Standard specifies the requirements and/or measures to remove the hazards and limit the risk on hand-fed vertical spindle moulding machines, hereinafter referred to as “machines”, designed to cut solid wood, chip board, fibreboard, plywood and also these materials where they are covered with plastic laminate or edgings.

This European Standard covers all the hazards relevant to this machine. These hazards are listed in clause 4.

This European Standard does not apply to machines set up on a bench or a table similar to a bench which are intended to carry out work in a stationary position and capable of being lifted by hand by one person.

This European Standard does not apply to hand-held woodworking machines or any adaptation permitting their use in a different mode, i.e. bench mounting and numeric control (NC).

This European Standard is primarily applicable to machines which are manufactured after the date of issue of this standard.

This European Standard does not apply to machines equipped with outboard bearings.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 292-1:1991, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic, terminology, methodology.*

EN 292-2:1991 + A1:1995, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications.*

EN 418:1992, *Safety of machines — Emergency stop equipment, functional aspects — Principles for design.*

EN 847-1:1997, *Tools for woodworking — Part 1: Milling tools — Circular saw blades.*

EN 982:1996, *Safety requirements for fluid power systems and their components — Hydraulics.*

EN 983:1996, *Safety requirements for fluid power systems and their components — Pneumatics.*

EN 1050:1996, *Safety of machinery — Principles for risk assessments.*

EN 1088:1995, *Safety of machinery — Interlocking devices associated with guards — General principles and provisions for design.*

EN 50144-1:1995, *Safety of hand-held electric motor operated tools — Part 1: General requirements.*

EN 60204-1:1992, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements.*

(IEC 204-1:1992, modified)

HD 21.1 S3:1997, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V — Part 1: General requirements.*

HD 22.1 S3:1997, *Rubber insulated cables of rated voltages up to and including 450/750 V — Part 1: General requirements.*

EN 60439-1/prA11:1995, *Low voltage switch gear and control gear assemblies — Part 1: Type tested and partially type tested assemblies.*

EN 60529:1991, *Degree of protection provided by enclosure. (IP code).*
(IEC 529:1989)

EN 60947-4-1:1992, *Low voltage switch gear and control gear — Part 4: Contactors and motor starters — Section 1: Electromechanical contactors and motor starters.*
(IEC 947-4-1:1990)

EN 60947-5-1:1991, *Low voltage switch gear and control gear — Part 5: Control circuits devices and switching elements — Section 1: Electromechanical control circuit devices.*
(IEC 947-5-1:1990)

EN 61029-1:1996, *Safety of transportable motor operated tools — Part 1: General requirements.*

prEN 61029-2-8, *Safety of transportable motor operated tools — Part 2-8: Particular requirements for single spindle vertical moulders.*

EN ISO 3743-1:1995, *Acoustics — Determination of sound power levels of noise sources — Engineering methods for small movable sources in reverberant fields — Part 1: Comparison method for hard-walled test rooms.*
(ISO 3743-1:1994)

EN ISO 3743-2:1996, *Acoustics — Determination of power levels of noise sources using sound pressure — Engineering methods for small movable sources in reverberant fields — Part 12: Method for special reverberation test rooms.*
(ISO 3743-2:1994)

EN ISO 3744:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in essentially free field over a reflecting plane.*
(ISO 3744:1994)

EN ISO 3746:1995, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Survey method using an enveloping measurement surface over a reflecting plane.*
(ISO 3746:1995)

EN ISO 9614-1:1995, *Acoustics — Determination of sound power levels of noise sources using sound intensity — Part 1: Measurement at discrete points.*
(ISO 9614-1:1993)

EN ISO 11202:1995, *Acoustics — Noise emitted by machinery and equipment — Survey method for the measurement of emission sound pressure levels at the workstation and other specified positions.*
(ISO 11202:1995)

EN ISO 11204:1995, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at the workstation and other specified positions with environmental connections.*
(ISO 11204:1995)

ISO 3745:1997, *Acoustics — Determination of sound power levels of noise sources — Precision methods for anechoic and semi-anechoic rooms.*

ISO 7009:1983, *Woodworking machines — Single spindle moulding machines — Nomenclature and acceptance conditions.*

ISO 7960:1995, *Airborne noise emitted by machine tools — Operating conditions for woodworking machines.*

ISO TR 11688-1:1995, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning.*

3 Definitions and terminology

For the purposes of this standard the following definitions apply.

3.1 Definitions

3.1.1

single spindle vertical moulding machine

hand fed machine fitted with a single vertical spindle (fixed or removable) the position of which is fixed during machining and a horizontal table, all or part of which are fixed during operation. The spindle passes through the table and its drive motor is situated beneath the table. The machine may have any of the following features:

- a) the facility for the spindle to be raised and lowered through the table;
- b) the facility to tilt the spindle;
- c) the facility for fitting an additional manually operated travelling table.

3.1.2

straight work

shaping of a workpiece with one face in contact with the table and a second with the fence, and where the work starts at one end of the workpiece and continues through to the other end (see Figure 1)

3.1.3

curved work

machining of a curve on a workpiece by having one side in contact with the table (or if held in a jig with the jig in contact with the table) and the other in contact with the vertical reference of a steady or ring guide when using a jig (see Figure 2)

3.1.4

tenoning

machining of projections and slots on the end of a workpiece to facilitate the joining of workpieces; this includes profiled tenons (see Figure 3)

3.1.5

stopped straight work

machining of only a part of the workpiece length (see Figure 4)

3.1.6

hand feed

manual holding and/or guiding of the workpiece

hand feed includes the use of a hand operated carriage on which the workpiece is placed manually or clamped and the use of a demountable power feed unit

3.1.7

demountable power feed unit

feed mechanism which is mounted on the machine so that it can be moved from its working position without the use of a spanner or similar additional device

3.1.8

speed range

speeds within which the tool spindle or tool is designed to operate

3.1.9

ejection

unexpected movement of the workpiece, parts of it or part of the machine from the machine during processing

3.1.10

kickback

particular form of ejection describing the unexpected movement of the workpiece, parts of it or parts of the machine opposite to the direction of feed during processing

3.1.11

anti-kickback device

device which either reduces the possibility of kickback or arrests the motion during kickback of the workpiece, parts of it or parts of the machine

3.1.12

removable spindle

tool spindle capable of being changed without removing the main spindle bearings

3.1.13

machine actuator

power mechanism used to effect motion of the machine

3.1.14

confirmation

statements, sales literature, leaflets or other documents where a manufacturer (or supplier) declares either the characteristics or the compliance of the material or product to a relevant standard

3.1.15

run-up time

elapsed time from the actuation of the start control device until the spindle reaches the actual speed related to the intended speed

3.1.16

run-down time

elapsed time from the actuation of the stop control device to spindle stand still

3.1.17

stationary machine

machine designed to be located on or fixed to the floor or other parts of the structure of the premises and to be stationary during use

3.1.18

transportable machine

machine which is located on the floor, stationary during use and equipped with a device, normally wheels, which allows it to be moved between locations

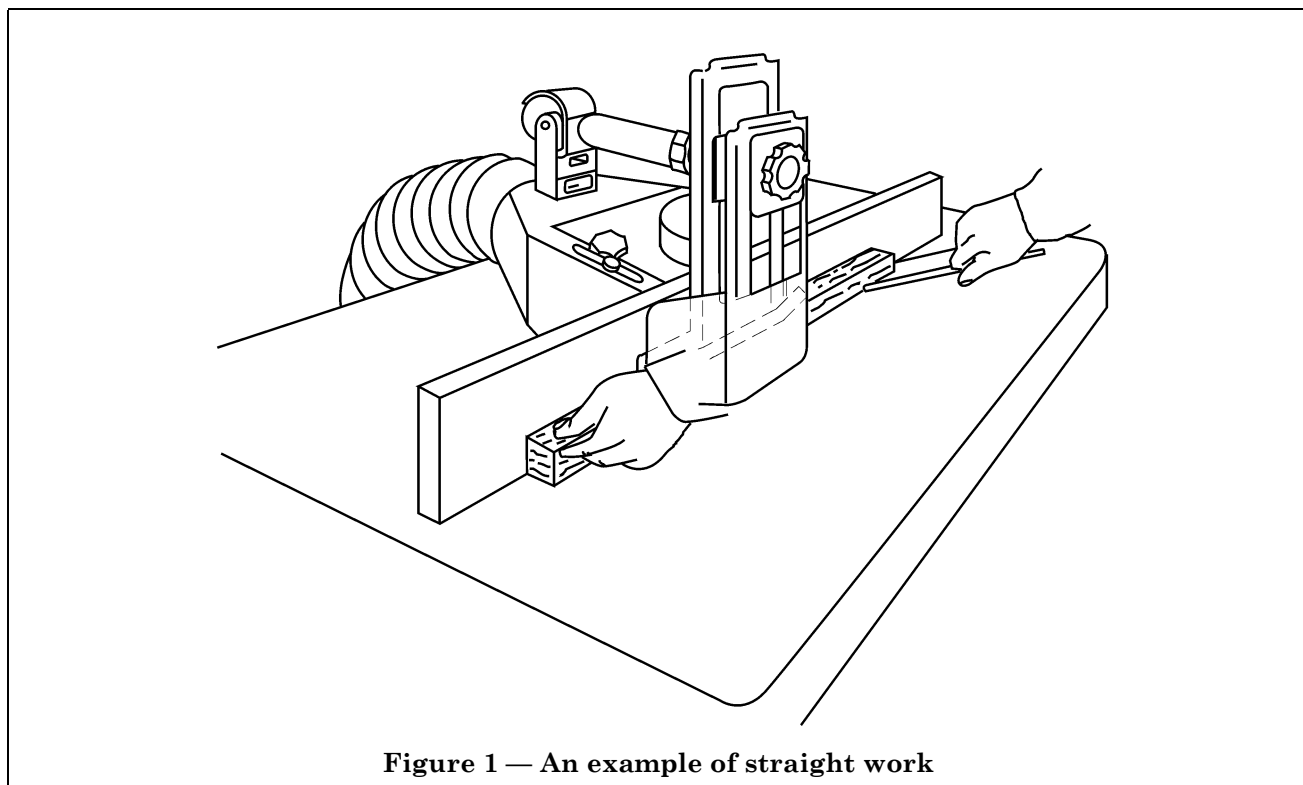
3.2

terminology

the names of the main parts of the machine are shown in Table 1 and Figure 5a), Figure 5b) and Figure 5c)

Table 1 — Main components of single spindle vertical moulding machines

Reference item	Terminology
1	Main frame
2	Speed indicator
3	Spindle lock
4	Start and stop controls
5	Tool
6	Table rings
7	Straight work guard
8	Fence plates
9	Enclosure
10	Chip and dust extraction outlet
11	Curved work guard
12	Bonnet guard
13	Guiding steady
14	Travelling table
15	Workpiece clamping device
16	Adjustable guard
17	Demountable power feed unit
18	Push stick
19	Guards fixed to the travelling table



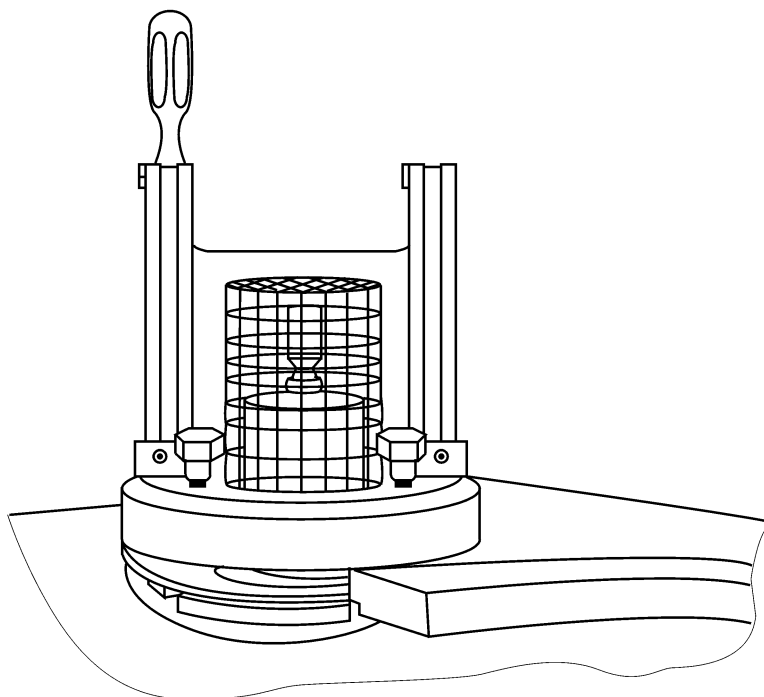


Figure 2 — An example of curved work

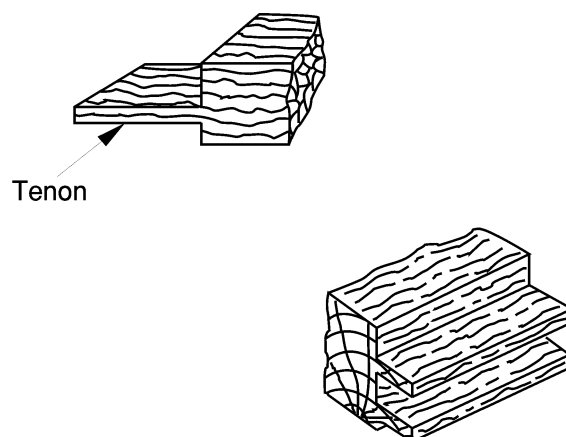


Figure 3 — Examples of tenons

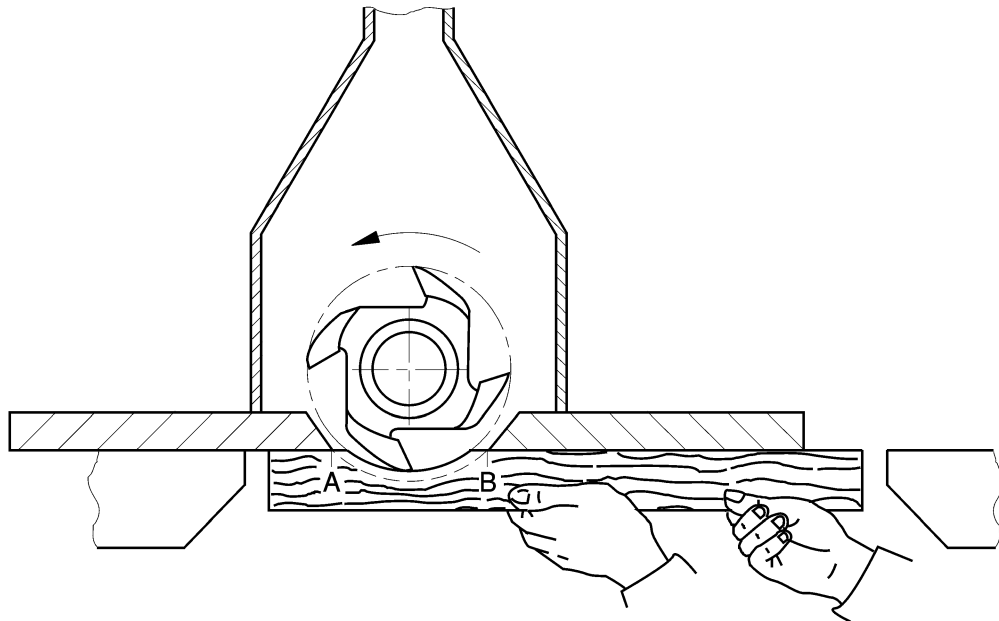
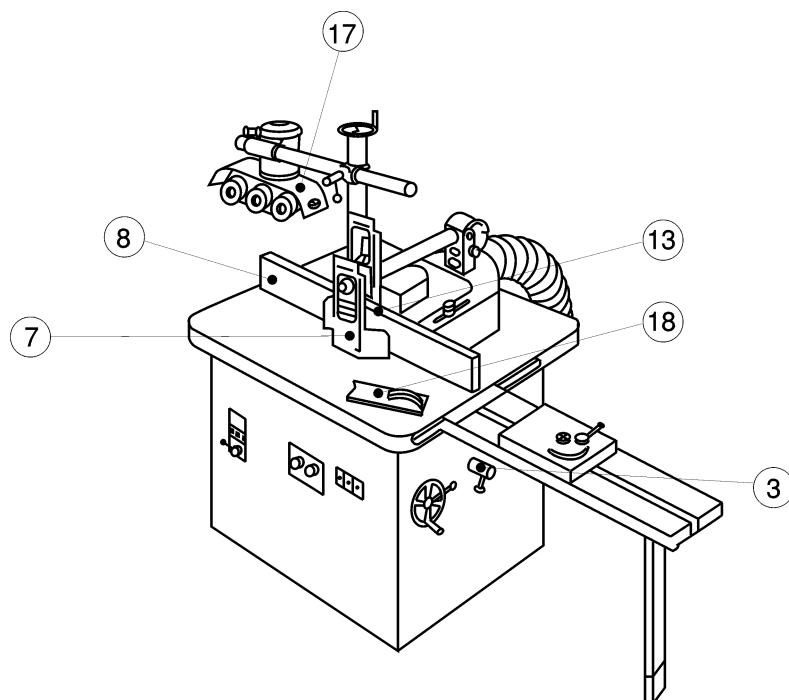
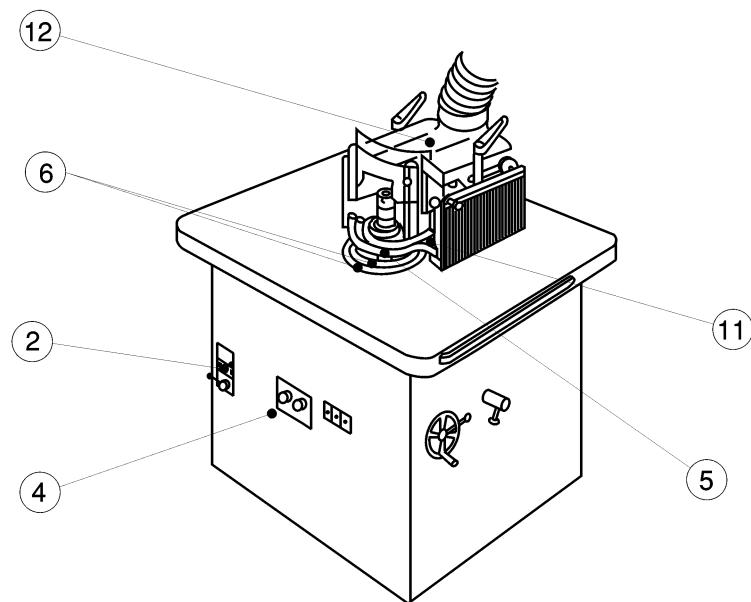


Figure 4 — An example of stopped straight work

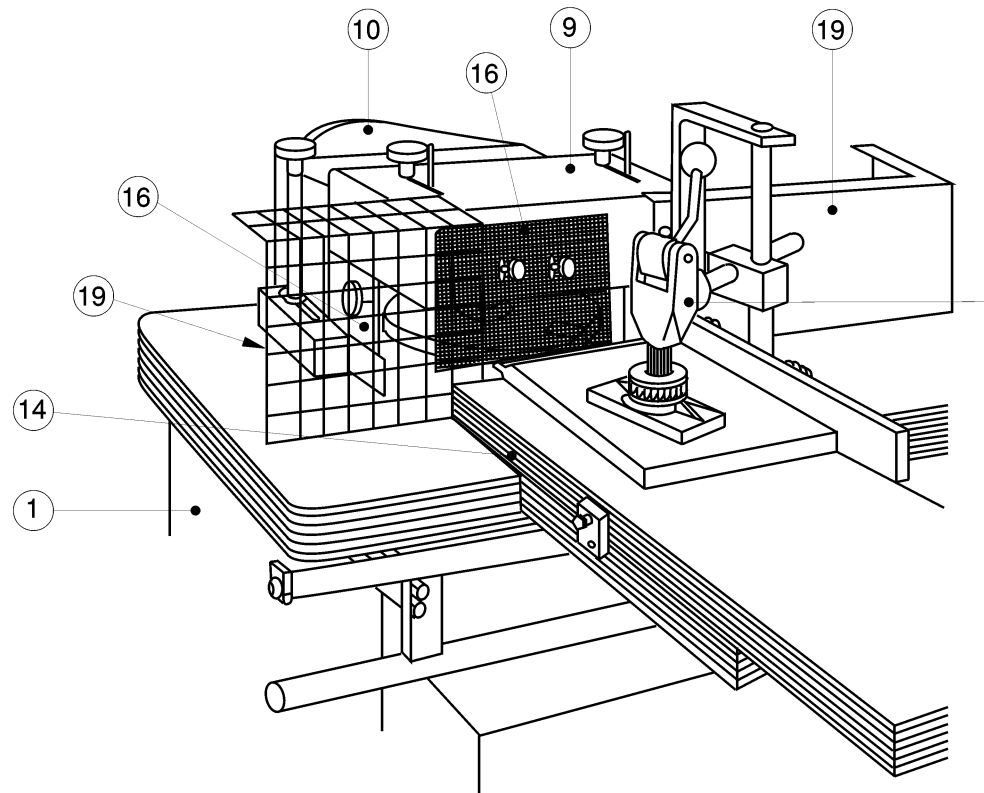


a) Single spindle vertical moulding machine equipped for straight work



b) Single spindle vertical moulding machine equipped for curved work

Figure 5 —



c) Single spindle vertical moulding machine equipped for tenoning

Figure 5 — (continued)

4 List of hazards

This standard deals with all hazards listed and relevant to the machines defined in the scope:

- for significant hazards by defining safety requirements and/or measures or by reference to relevant type B standards;
- for hazards that are not significant e.g. general, minor, or secondary hazards, by reference to relevant type A standards especially to parts 1 and 2 of EN 292:1991.

These hazards are listed in Table 2 in accordance with Annex A of EN 292-2:1991/A1:1995.

5 Safety requirements and/or measures

For guidance in connection with risk reduction by design, see clause 3 of EN 292-2:1991, and in addition:

5.1 Controls

5.1.1 Safety and reliability of control systems

For the purposes of this European Standard a safety related control system is one from and including the initial manual control or position detector to the point of input to the final actuator or element e.g. motor. The safety related control systems of this machine are those for:

- starting (see 5.1.3);
- normal stopping (see 5.1.4);
- emergency stopping (if required) (see 5.1.5);
- spindle adjustment (if electrical) (see 5.2.3.4);
- spindle speed (if selection is electrical) (see 5.1.7);
- interlocking (see 5.1.7);