



# SLOVENSKI STANDARD

## SIST EN 848-2:2000

01-april-2000

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### Safety of woodworking machines - One side moulding machines with rotating tool - Part 2: Single spindle handfed/integrated fed routing machines

Safety of woodworking machines - One side moulding machines with rotating tool - Part  
2: Single spindle handfed/integrated fed routing machines

Sicherheit von Holzbearbeitungsmaschinen - Fräsmaschinen für einseitige Bearbeitung  
mit drehendem Werkzeug - Teil 2: Einspindelige Oberfräsmaschinen mit  
Handvorschub/mechanischem Vorschub

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Sécurité des machines pour le travail du bois - Machines à fraiser sur une face, outil  
rotatif - Partie 2: Défonceuses monobroche à avance manuelle mécanisée

Ta slovenski standard je istoveten z: EN 848-2:1998

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#### **ICS:**

79.120.10 Lesnoobdelovalni stroji Woodworking machines

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English version

## Safety of woodworking machines - One side moulding machines with rotating tool - Part 2: Single spindle handfed/integrated fed routing machines

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This European Standard was approved by CEN on 10 April 1997.

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

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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of an identical text or by endorsement, at the latest by January 1999 and conflicting national standards shall be withdrawn at the latest by January 1999.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.

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

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 compliment 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

## 0 Introduction

This European standard has been prepared to be a harmonised standard to provide one means of conforming to the essential safety requirements of the Machinery Directive and associated EFTA Regulations and is a type C standard as defined in EN 292-1 : 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 handfed/integrated fed routing 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.

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 single spindle handfed/integrated fed routing 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, edgings or veneer.

This European standard covers all the hazards relevant to this machine. These hazards are listed in 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, e.g. bench mounting. This standard does not apply to inverted pin routers and to radial arm router (machine where the workpiece is fixed and the tool head is manually moved).

The European Standard does not apply to CNC boring machines and routing machines which are dealt with in prEN 848-3.

This standard is primarily directed to machines which are manufactured after the date of issue of the standard.

## 2 Normative references

This European Standard incorporates by dated or undated references 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	Safety of machinery - Basic concepts - General principles for design - Part 2 : Technical principles and specifications
EN 292-2/A1	1995	
EN 418	1992	Safety of machinery - Emergency stop equipment, functional aspects - Principles for design
EN 847-1	1997	Tools for woodworking - Part 1 : Milling tools - Circular saw blades
pr EN 848-3		Safety of machinery - One side moulding machines with rotating tool - Part 3 : NC boring machines and routing machines
EN 982	1996	Safety of machinery - Safety requirements for fluid power systems and components - Hydraulics
EN 983	1996	Safety of machinery - Safety requirements for fluid power systems and components - Pneumatics
pr EN 1005-3		Safety of machinery - Human physical performance - Part 3 : Recommended force limits for machinery operation
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/pr A11	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 : contractors and motors starters - Section 1 : Electromechanical contractors 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
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 sound power levels of noise sources using sound pressure - Engineering methods for small movable sources in reverberant fields - Part 2 : 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 an essentially free field over a reflecting plane (ISO 3744 : 1994)

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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 discreet points (ISO 9614-1 : 1993)
EN ISO 11202	1995	Acoustics - Noise emitted by machinery and equipment - Measurement method of emission sound pressure levels at the work station and at other specified positions - Survey method in situ (ISO 11202 : 1995)
EN ISO 11204	1995	Acoustics - Noise emitted by machinery and equipment - Measurement of emission sound pressure levels at the work station and at other specified positions. Method requiring environmental corrections (ISO 11204 : 1995)
ISO 3745	1977	Acoustics - determination of sound power levels of noise sources - Precision methods for anechoic and semi anechoic rooms
ISO 7948	1987	Woodworking machines - Routing 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 routing machine (standards.iteh.ai)

A “C” frame type machine for moulding of workpieces by means of :

- one tool spindle located above the table and running with speeds between 6000 min<sup>-1</sup> and generally 24000 min<sup>-1</sup>. The work head may be tiltable, but is fixed during machining;
- a table to support the workpiece or jig. The table may be tiltable and/or movable in X, Y and Z direction and/or adjustable round a C axis;
- the tool spindle may be moved up and down during machining manually or by means of hydraulic or pneumatic devices. Workpiece feeding may be manual or by means of integrated feed systems.



### 3.1.2 straight work

The 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).

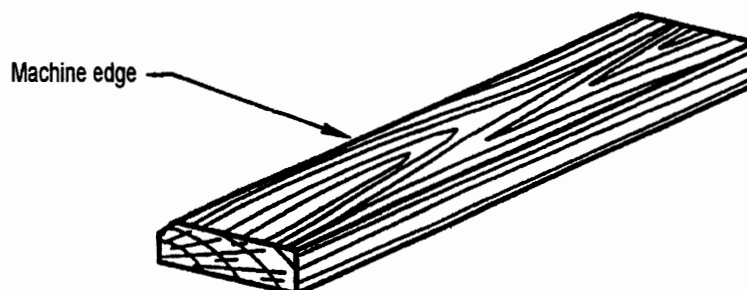


Figure 1 : Straight work

### 3.1.3 stopped straight work

The machining of only a part of the workpiece length (see figure 2).

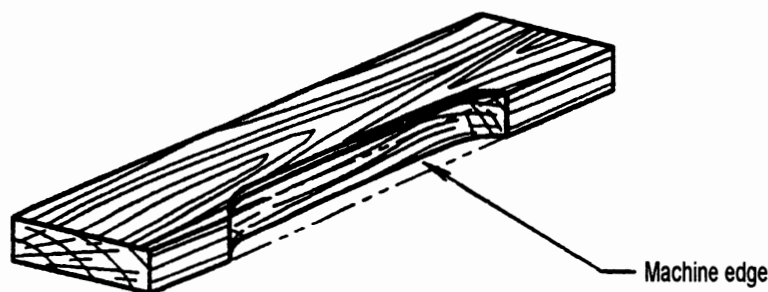


Figure 2 : Stopped straight work

### 3.1.4 shaped work

The machining of a curve at the edge or on the surface of a workpiece.

NOTE : This may be produced by attaching the workpiece to a jig. On the underside of the jig is a template which is in contact with a reference pin located in the centre of the table directly below the cutter. The jig is moved past the pin, but in contact with it, thereby reproducing the shape of the template on the workpiece (see figures 3 and 4).

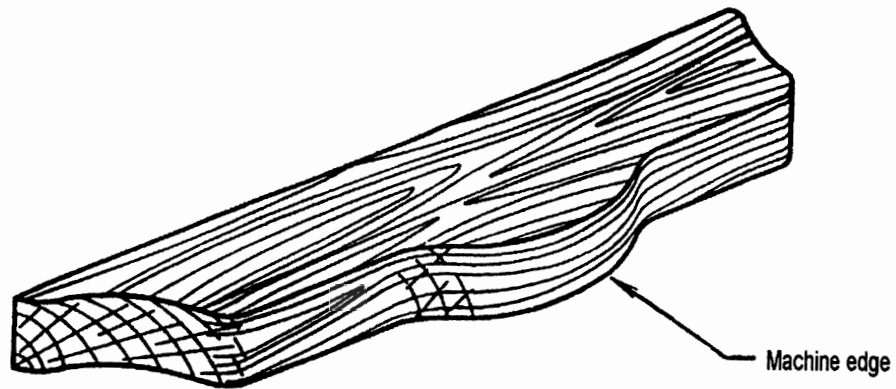
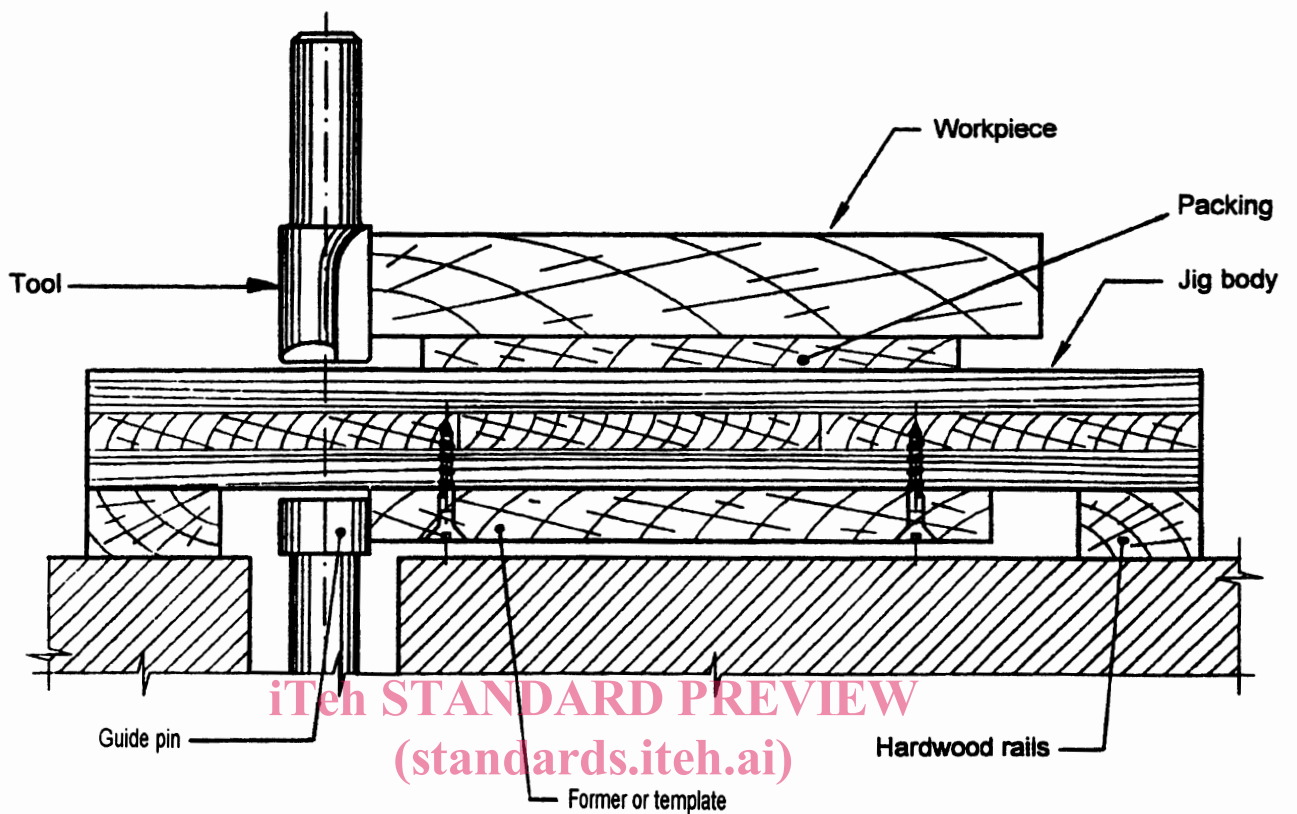


Figure 3 : Shaped work



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Figure 4 : Shaped work (hand fed machine)

On machines fitted with an integrated workpiece feed system, the template on the underside of the jig and the jig are moved round by drive rollers (see figure 5).

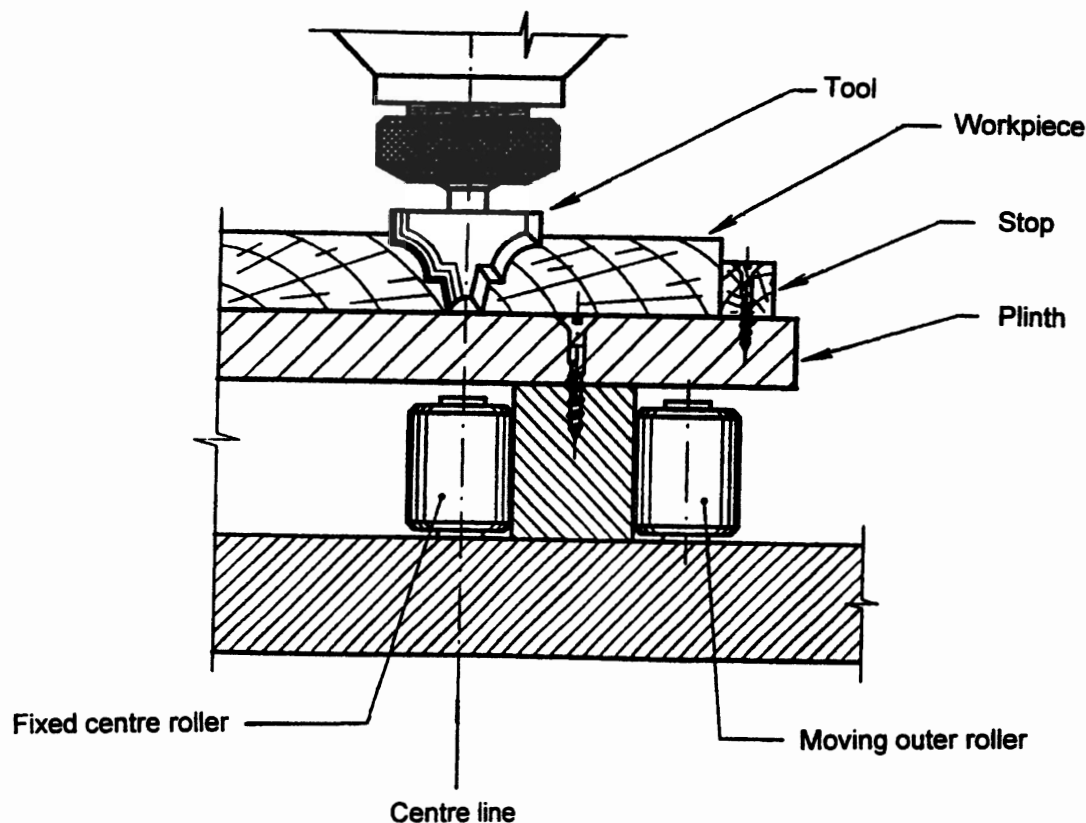


Figure 5 : Shaped work (integrated feed machine)

**3.1.5** throat capacity

The minimum distance between centre line of the spindle and column.

**3.1.6** hand feed

The manual holding and/or guiding of the workpiece. Hand feed includes the use of a hand operated jig on which the workpiece is placed manually or clamped.

**3.1.7** integrated feed

A feed mechanism for the workpiece or tool which is integrated with the machine and where the workpiece is held and controlled mechanically during the machining operation.

**3.1.8** loading the machine

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The manual placing of the workpiece on to a jig or the presentation of the workpiece to an integrated feed device.

**3.1.9** speed range

The speeds within which the tool spindle is designed to operate.

**3.1.10** ejection

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

**3.1.11** kickback

A 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.

**3.1.12** anti-kickback device

A 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.

**3.1.13** run-up time

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

**3.1.14** rundown time

The elapsed time from the actuation of the stop control device to complete spindle standstill.

**3.1.15** removable spindle

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

**3.1.16** machine actuator

A power mechanism used to effect motion of the machine.

**3.1.17** confirmation

Statement, 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.

**3.1.18** revolving stop

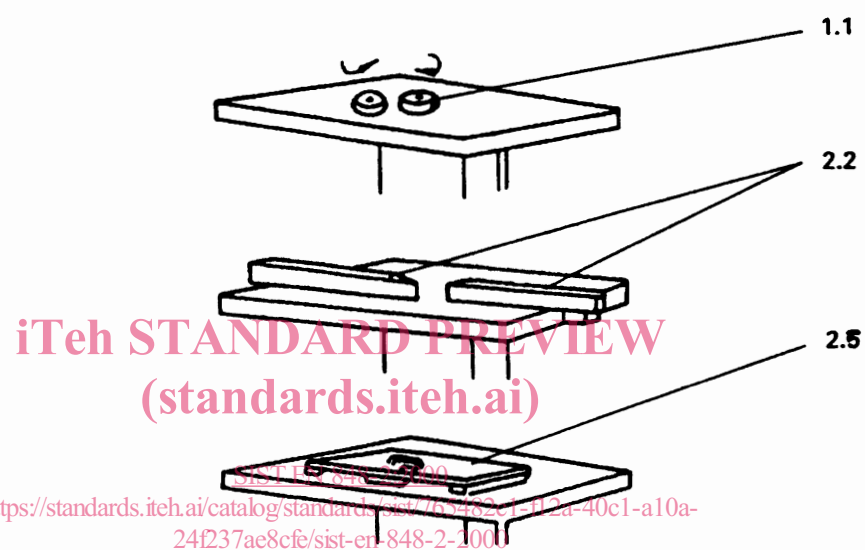
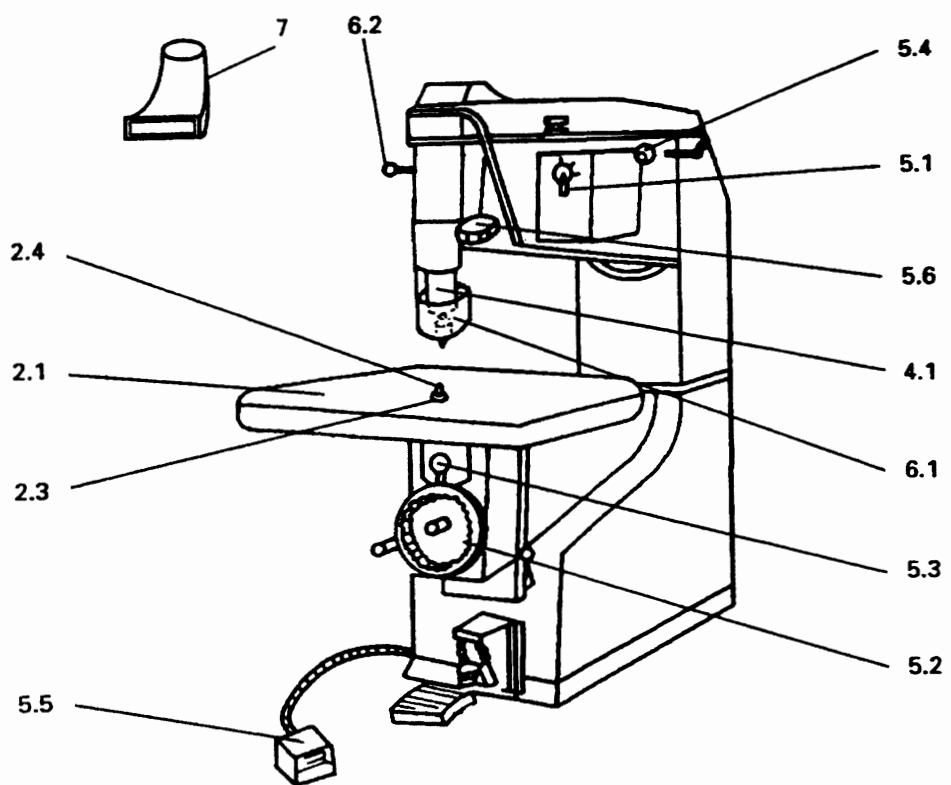
An adjustment device located on the mobile part of the machining head to allow for cutting edge position setting with respect to the table for mass production machining.

**3.1.19** 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 6.



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**Figure 6 : Example of routing machines**