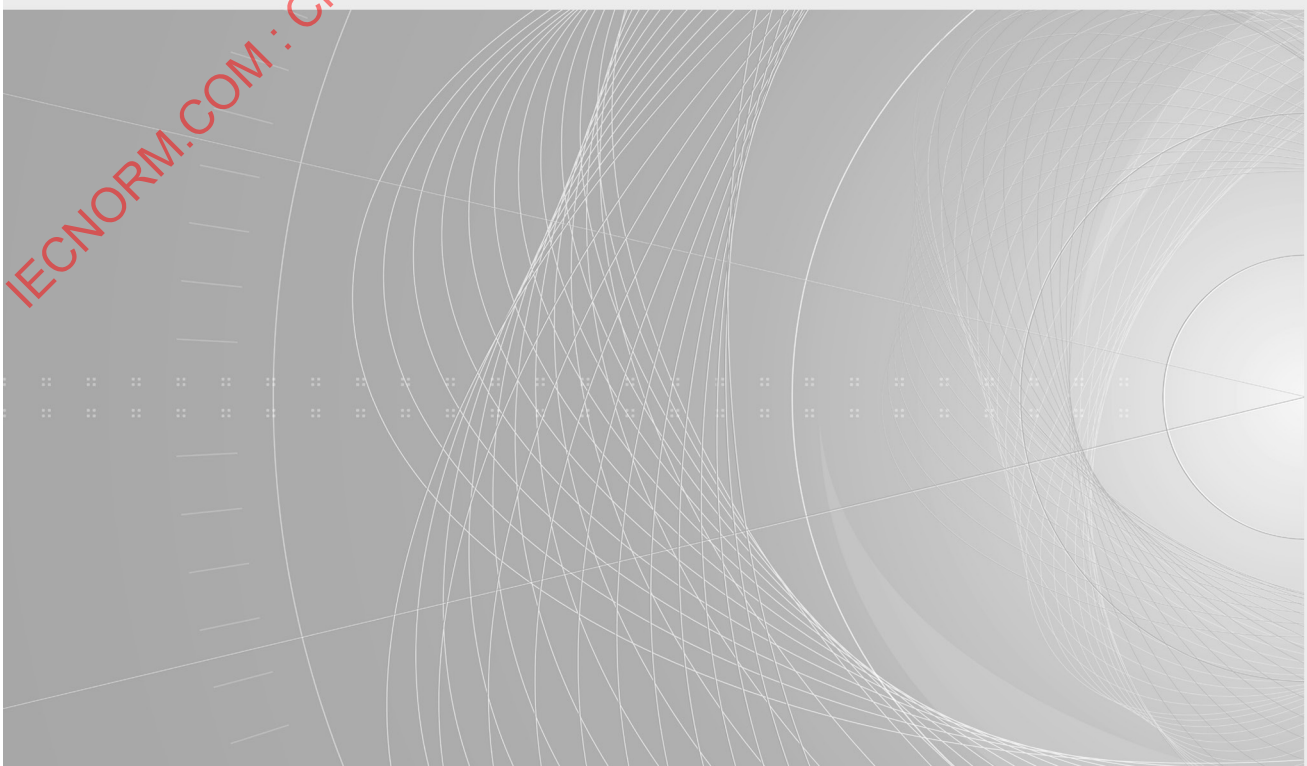
# IEC 62841-2-17

Edition 1.1 2025-02
CONSOLIDATED VERSION

# INTERNATIONAL STANDARD

## Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety –
## Part 2-17: Particular requirements for hand-held routers





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## Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 2-17: Particular requirements for hand-held routers



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# ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY –

## Part 2-17: Particular requirements for hand-held routers

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**This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.**

**IEC 62841-2-17 edition 1.1 contains the first edition (2017-08) [documents 116/335/FDIS and 116/342/RVD] and its amendment 1 (2025-02) [documents 116/858/FDIS and 116/881/RVD].**

**In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.**

International Standard IEC 62841-2-17 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

This Part 2-17 is to be used in conjunction with the first edition of IEC 62841-1 (2014).

This Part 2-17 supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC standard: Particular requirements for hand-held routers.

Where a particular subclause of Part 1 is not mentioned in this Part 2-17, that subclause applies as far as relevant. Where this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

The terms defined in Clause 3 are printed in **bold typeface**.

Subclauses, notes and figures which are additional to those in Part 1 are numbered starting from 101.

A list of all parts of the IEC 62841 series, under the general title: *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety*, can be found on the IEC website.

The committee has decided that the contents of this document and its amendment will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

The National Committees are requested to note that for this document the stability date is 2019.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 36 months from the date of publication.

# ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY –

## Part 2-17: Particular requirements for hand-held routers



## 1 Scope

This clause of Part 1 is applicable, except as follows:

*Addition:*

This part of IEC 62841 applies to hand-held **routers** intended for cutting slots into or shaping the edge of wood and analogous materials, plastics and non-ferrous metals except magnesium.

NOTE 101 **Routers** that are primarily used for trimming the edge of materials are also known as trimmers.

NOTE 102 **Routers** that are used to cut various materials through the rotary action are also known as rotary cutters.

This part of IEC 62841 does not apply to jointers.

NOTE 103 Jointers are covered by IEC 62841-2-19.

This part of IEC 62841 does not apply to small rotary tools.

NOTE 104 Small rotary tools are covered by IEC 62841-2-23.

## 2 Normative references

This clause of Part 1 is applicable.

## 3 Terms and definitions

This clause of Part 1 is applicable, except as follows:

*Additional definitions:*

**3.101**
**base**
part ~~supporting~~ of the **router** that supports other parts of the tool on the workpiece

**3.102**
**rotary cutting bit**
rotating cutting **accessory** with a shank for mounting it into a collet having its main feed direction perpendicular to its axis of rotation

Note 1 to entry: There are **rotary cutting bits** that allow an additional plunging operation parallel to its axis of rotation.

**3.103**
**router**
tool ~~with a~~ which includes a motor housing, **base** and a collet, designed to be fitted with a **rotary cutting bit**

**3.104**
**trimmer**
**type 1 router** designed to be fitted with a rotary cutter and a base that allows for control of trimming the edge of laminate sheet or similar materials

**3.105**
**type 1 router**
**router** that has the following criteria:

a) ~~a mass, excluding a detachable **base**, a **separable battery pack** or a **detachable battery pack**~~ a mass of the motor housing and collet, excluding the **base**, **supply cord**, any **separable battery pack** or any **detachable battery pack**, not exceeding 2 kg; and

b) a collet capacity not exceeding 8 mm

**3.106**
**type 2 router**
**router** that has the following criteria:

a) ~~a mass, excluding a detachable **base**, a **separable battery pack** or a **detachable battery pack**~~ a mass of the motor housing and collet, excluding the **base**, **supply cord**, any **separable battery pack** or any **detachable battery pack**, exceeding 2 kg; or

b) a collet capacity exceeding 8 mm

## 4 General requirements

This clause of Part 1 is applicable.

## 5 General conditions for the tests

This clause of Part 1 is applicable, except as follows:

**5.17** *Addition:*

*The mass of the tool includes all handles and the dust extraction adapter, if any.*

## 6 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

## 7 Classification

This clause of Part 1 is applicable.

## 8 Marking and instructions

This clause of Part 1 is applicable, except as follows:

**8.1** *Addition:*

– **rated no-load speed.**

**8.14.1** *Addition:*

The additional safety instructions as specified in 8.14.1.101 shall be given. This part may be printed separately from the “General Power Tool Safety Warnings”.

**8.14.1.101 Safety instructions for routers**

a) **Hold the power tool by insulated gripping surfaces only, because the cutter may contact its own cord.** *Cutting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.*

b) **Use clamps or another practical way to secure and support the workpiece to a stable platform.** *Holding the work by your hand or against the body leaves it unstable and may lead to loss of control.*

**8.14.2** a) *Additional items:*

101) Information about the types of **rotary cutting bits** for which the tool is designed;

102) Information concerning the diameter of shank for which the collet(s) is intended;

103) Instruction to use only **rotary cutting bits** of the correct shank diameter for the collet mounted;

104) Instruction to use only **rotary cutting bits** suitable for the speed of the tool;

105) Instruction on how to change the collet or the collet cone (e.g. for setting up different shank diameters), if applicable.

**8.14.2** b) *Additional items:*

101) Instruction on the correct use of the dust collection system, if applicable.

## 9 Protection against access to live parts

This clause of Part 1 is applicable.

## 10 Starting

This clause of Part 1 is applicable.

## 11 Input and current

This clause of Part 1 is applicable.

## 12 Heating

This clause of Part 1 is applicable.

## 13 Resistance to heat and fire

This clause of Part 1 is applicable.

## 14 Moisture resistance

This clause of Part 1 is applicable.

## 15 Resistance to rusting

This clause of Part 1 is applicable.

## 16 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

## 17 Endurance

This clause of Part 1 is applicable.

## 18 Abnormal operation

This clause of Part 1 is applicable, except as follows:

**18.8** *Replacement of Table 4 by the following:*

**Table 4 – Required performance levels**

| Type and purpose of SCF | Minimum performance level (PL) |
|---|---|
| **Power switch** – prevent unwanted switch-on for **type 1 routers** | b |
| **Power switch** – prevent unwanted switch-on for **type 2 routers** | c |
| **Power switch** – provide desired switch-off | b |
| Any electronic control to pass the test of 18.3 | a |
| Overspeed prevention to prevent output speed above 130 % of **rated no-load speed** | b |
| Provide desired direction of rotation | a |
| Prevent exceeding thermal limits as in ~~Clause~~ 18.4 and 18.5.3 | a |
| Prevent self-resetting as required in 23.3 for **type 1 routers** | a |
| Prevent self-resetting as required in 23.3 for **type 2 routers** | b |
| Prevent unwanted lock-on of the **power switch** function | b |
| Lock-off function as required by 21.18.1.2 for **type 1 routers** | a |
| Lock-off function as required by 21.18.1.2 for **type 2 routers** | b |
| NOTE In Europe (EN 62841-2-17), the following additional requirement applies:<br>Restart prevention as required by 21.18.1.1 | b |

## 19 Mechanical hazards

This clause of Part 1 is applicable, except as follows:

**19.1** *Replacement of the first paragraph:*

Moving and dangerous parts other than the **rotary cutting bit** and the collet shall be so positioned or enclosed to provide adequate protection against personal injury. The protection of the user against accidental contact with the **rotary cutting bit** and the collet is provided by the requirements of 19.4.101.

**19.4** *Replacement:*

**Type 1 routers** shall have at least one handle or grasping surface. The motor housing and/or parts of the **base** that assist in guiding the **router** in use may be considered as a grasping surface, if identified as such in accordance with 8.14.2 b) 6).

**Type 2 routers** shall have at least one handle and an additional handle or grasping surface to allow the operation of the tool with two hands. The motor housing and/or parts of the **base** that assist in guiding the **router** in use may be considered as a grasping surface, if identified as such in accordance with 8.14.2 b) 6).

*Compliance is checked by inspection.*

### 19.4.101 Prevention of inadvertent contact

The handles shall be so shaped or located as to minimise the risk of inadvertent contact of the user's hand with the **rotary cutting bit** and the collet.

For **type 1 routers**, a removable cover for the purpose of changing the **accessory** which is provided to meet the requirements of 19.4.101 may be removable without the aid of a tool.

For handle(s), inadvertent contact of the user's hand is considered to be prevented if there is sufficient distance between a defined measuring point on the handle surface and the **rotary cutting bit** and the collet.

*Compliance is checked as follows:*

*A test pin with a diameter of the largest collet size is mounted to the tool. A mark is applied around the test pin (10 ± 1) mm from the collet. The distance between the defined measuring point and the mark on the test pin shall be at least 120 mm. The measurement shall be carried out as a chain distance. See Figure 101.*

*With the **base** set to maximum depth of cut, to establish the measuring point on the handle(s), follow the outlined procedure below.*

a) *Establish the closest (A) and the most distant (B) points from the plane of the **base** on the handle. Equidistant between points (A) and (B), draw the horizontal intersecting line on the plane parallel with the **base** and the surface of the handle.*

b) *The point on the intersecting line of the handle surface with the largest radial distance from the centreline of the spindle is the defined measuring point.*

For a motor housing and/or parts of the **base** used as a grasping surface, inadvertent contact of the user's hand is considered to be prevented by a barrier located between the grasping surface and the **rotary cutting bit**, see Figure 102. The barrier shall have a height *x* of at least 6 mm. A dust collecting system may be part of this barrier.

Alternatively to a barrier, for a motor housing and/or parts of the **base** used as a grasping surface in a **type 1 router** with an open portion(s) above the **base**, inadvertent contact of the user's hand is also considered to be prevented if either

– the **rotary cutting bit** and the collet are not accessible above the **base** by means of the test probe B of IEC 61032:1997 with a force not exceeding 5 N;

or

– there is a minimum distance of 60 mm between
  - a point located 40 mm above the lower edge of the grasping surface area in accordance with 8.14.2 b) 6) along its centreline; and
  - any point on the edge of any open portion (see Figure 103).

*Compliance is checked by manual test using test probe B of IEC 61032:1997 and by measurement. No covers are removed for the manual test. The 60 mm measurement is carried out as a chain distance.*

*Adjustment elements capable of being readjusted while the tool is operating, e.g. "revolving depth gauge", shall be located so that touching of rotating parts is avoided.*

*Compliance is checked by inspection.*

**19.6** This subclause of Part 1 is applicable.

**19.101** **Type 2 routers** shall be provided with a **base** which is capable of being adjusted to surround the **rotary cutting bit** so as to provide sufficient stability during **normal operation**.

*Compliance is checked by inspection and by the following test.*

*For the test, the tool is prepared as follows:*

- *the motor is switched off;*
- *no **rotary cutting bit** is installed;*
- *the tool is adjusted such that the collet is at the highest position;*
- *tools provided with an appliance inlet are fitted with an appropriate connector and flexible cable or cord.*

*The tool is placed in its most unfavourable position with its **base** resting on a plane that is inclined at an angle of 10° to the horizontal. The cable or cord, if any, shall rest on the inclined plane in the most unfavourable position. For the test, the tool is prevented from sliding.*

*The tool shall not tip over.*

**19.102** **Type 1 routers** shall be provided with a **base** so as to provide guidance during operation.

*Compliance is checked by inspection.*

## 20 Mechanical strength

This clause of Part 1 is applicable.

## 21 Construction

This clause of Part 1 is applicable, except as follows:

**21.18.1** *Addition:*

For **routers**, **power switches** other than **momentary power switches** are permitted.

**21.18.1.1** *Addition:*

~~For **routers, power switches** other than **momentary power switches** are permitted.~~

NOTE In Europe (EN 62841-2-17), the following additional requirement applies:

For **routers**, either

- the **power switch** shall be a **momentary power switch** without having a locking arrangement in the "on" position

or

– the tool shall not restart after an interruption of the mains supply without releasing and re-actuating the **power switch**.

**21.18.1.2** *Addition:*

**Routers** are regarded as tools having a risk associated with inadvertent starting.

**21.35** This subclause of Part 1 is applicable for all **routers** except for **trimmers**.

*Addition:*

An integral dust collection/suction device or dust outlet(s) may be removable without the use of a tool.

## 22 Internal wiring

This clause of Part 1 is applicable.

## 23 Components

This clause of Part 1 is applicable, except as follows:

**23.3** *Replacement of the first paragraph:*

Protection devices or circuits shall be of the non-self-resetting type unless the tool is equipped with a **momentary power switch** with no provision for being locked in the "on" position.

## 24 Supply connection and external flexible cords

This clause of Part 1 is applicable.

## 25 Terminals for external conductors

This clause of Part 1 is applicable.

## 26 Provision for earthing

This clause of Part 1 is applicable.

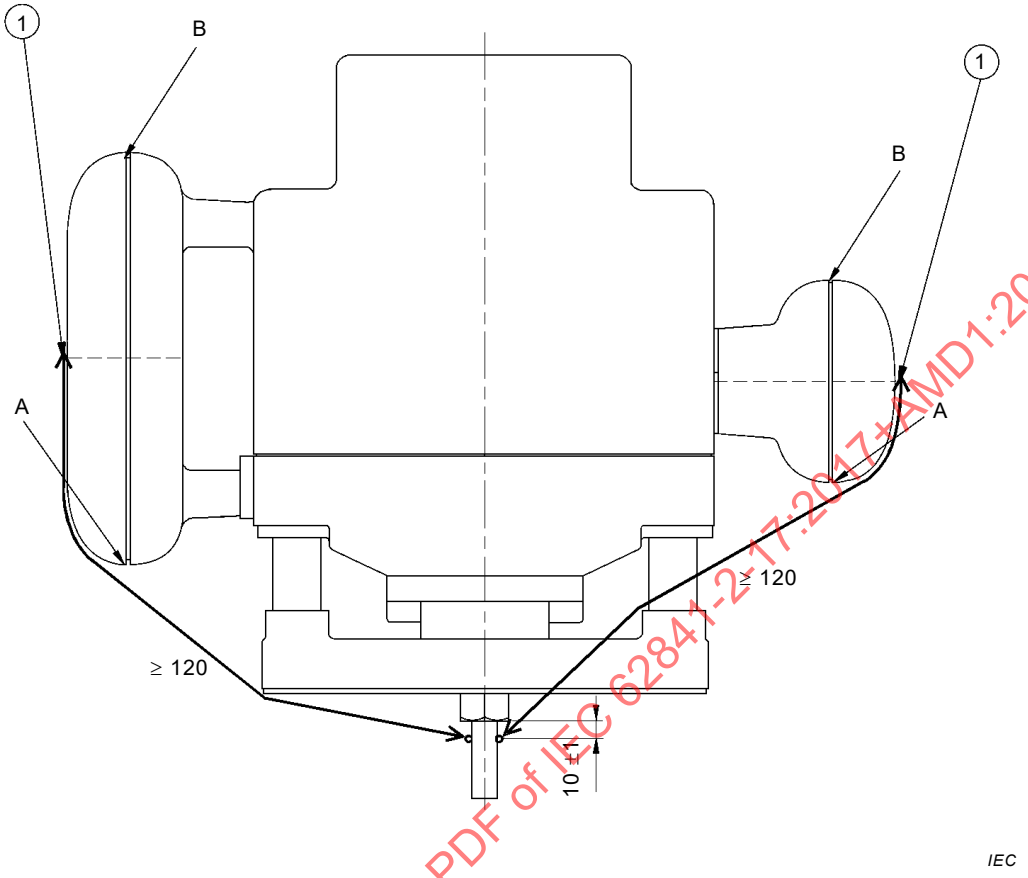
## 27 Screws and connections

This clause of Part 1 is applicable.

## 28 Creepage distances, clearances and distances through insulation

This clause of Part 1 is applicable.

*Dimensions in millimetres*

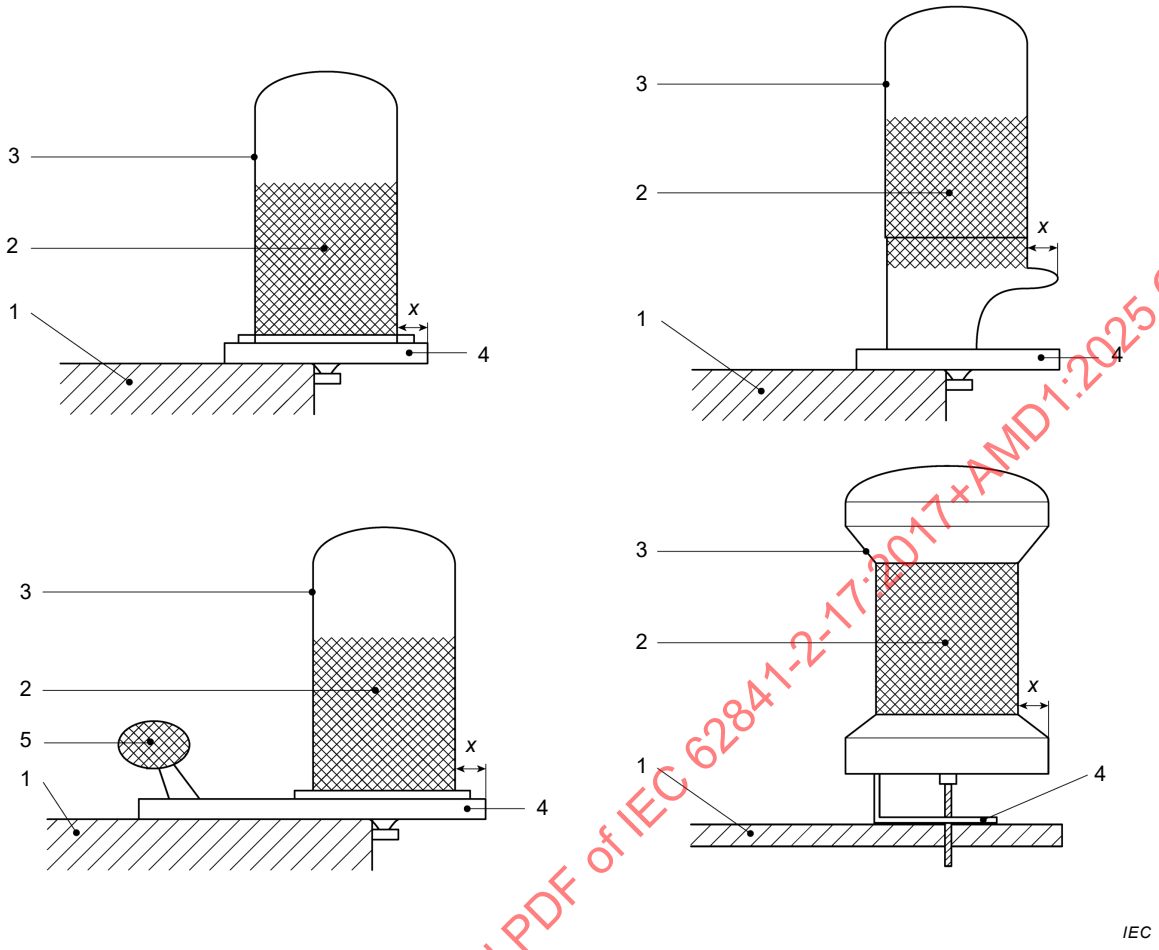



**Key**

1 defined measuring points

A, B reference points

**Figure 101 – Measurement of distance between handle and rotary cutting bit**

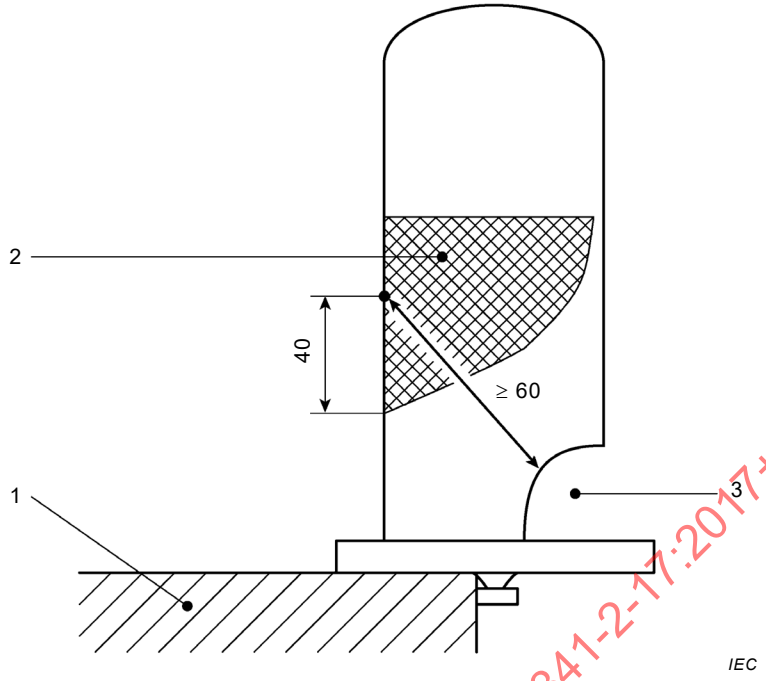



**Key**

1 workpiece
2 grasping surface
3 motor housing
4 **base**
5 auxiliary handle
*x* height of a barrier

**Figure 102 – Various designs with barrier**

*Dimensions in millimetres*




**Key**

1 workpiece

2 grasping surface

3 open portion above the **base**

**Figure 103 – Design with minimum distance from grasping surface**

# Annexes

The annexes of Part 1 are applicable except as follows.

## Annex I
(informative)

## Measurement of noise and vibration emissions

NOTE In Europe (EN 62841-2-17), Annex I is normative.

### I.2 Noise test code (grade 2)

This clause of Part 1 is applicable except as follows:

#### I.2.4 Installation and mounting conditions of the power tools during noise tests

*Addition:*

**Type 2 routers** are held and used as specified in I.2.5.

**Type 1 routers** are suspended. The **base** of the tool shall be horizontal.

#### I.2.5 Operating conditions

*Addition:*

The temperature requirements of 5.6 are not applicable.

**Type 1 routers** are tested at no-load, all speed setting devices adjusted to the highest value.

**Type 2 routers** are tested under load observing the conditions shown in Table I.101.

**Table I.101 – Test conditions for type 2 routers**

| | |
|---|---|
| **Orientation** | Cutting grooves in a horizontal piece of medium density fibreboard (MDF) having the minimum dimensions 800 mm (length) × 400 mm (width) × 30 mm (depth).<br>The board is fixed on a bench by screws, clamps, air cylinders or the like with a resilient material between bench and workpiece |
| **Tool bit** | New ∅ 12 mm straight sided **rotary cutting bit** for the entire series of tests, as specified for MDF |
| **Feed force** | As necessary for smoothly working without overloading the machine. Apply equal force to both handles avoiding excessive gripping forces |
| **Test cycle** | Cutting a 10 mm deep groove across the 400 mm width of the MDF. Distance between grooves to be 10 mm using the guide fence if supplied |

### I.3 Vibration

This clause of Part 1 is applicable except as follows:

#### I.3.3.2 Location of measurement

*Addition:*

Figure I.101 and Figure I.102 show the positions at both handles.

### I.3.5.1 General

*Addition:*

For **battery** operated tools, the tests are conducted with the lightest **battery** in accordance with K.8.14.2 e) 2) of Part 1 that has sufficient capacity

– for **type 1 routers**, to operate the tool at no-load for at least 25 min; and
– for **type 2 routers**, to complete the 15 measurements as specified in I.3.6.1 of Part 1, under the operating conditions described in Table I.101.

### I.3.5.3 Operating conditions

*Addition:*

**Type 1 routers** are tested at no-load.

**Type 2 routers** are tested under load according to the conditions shown in Table I.101.

### I.3.6.2 Declaration of the vibration total value

*Addition:*

The vibration total value $a_h$ of the handle with the highest emission and the uncertainty $K$ shall be declared.

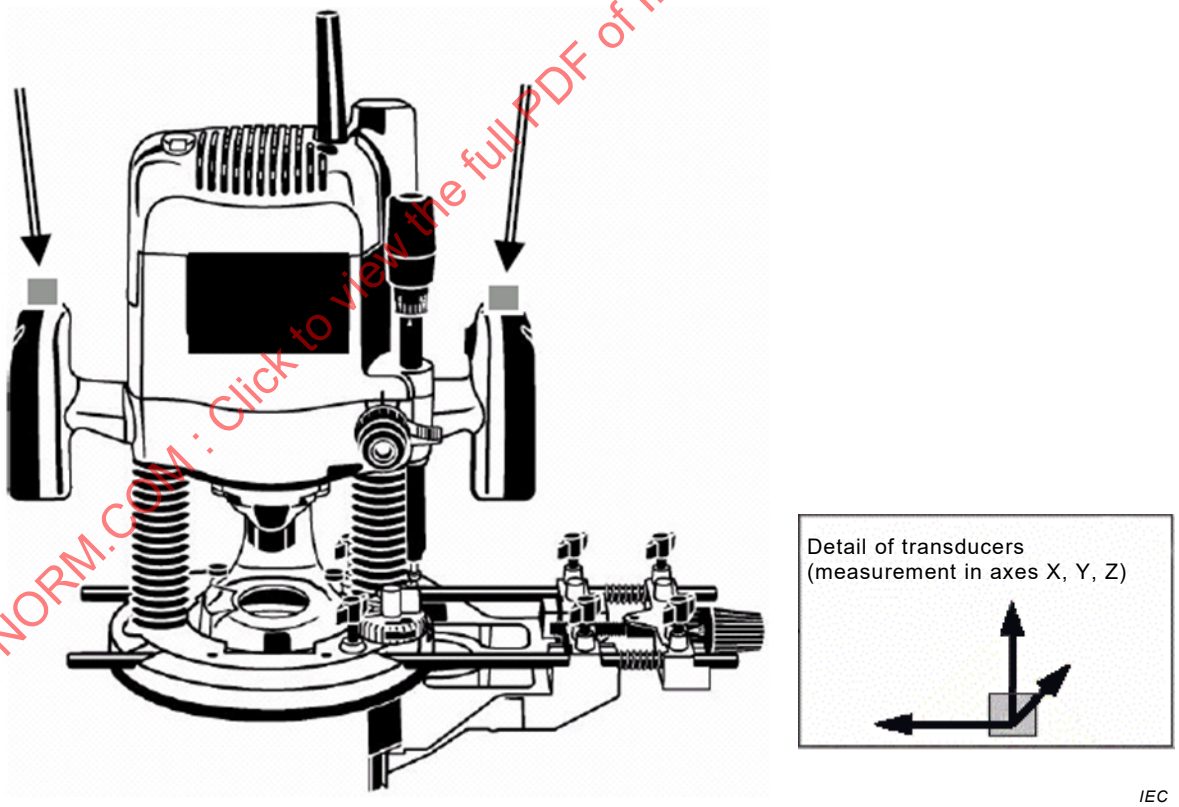



**Figure I.101 – Positions of transducers for type 2 routers**

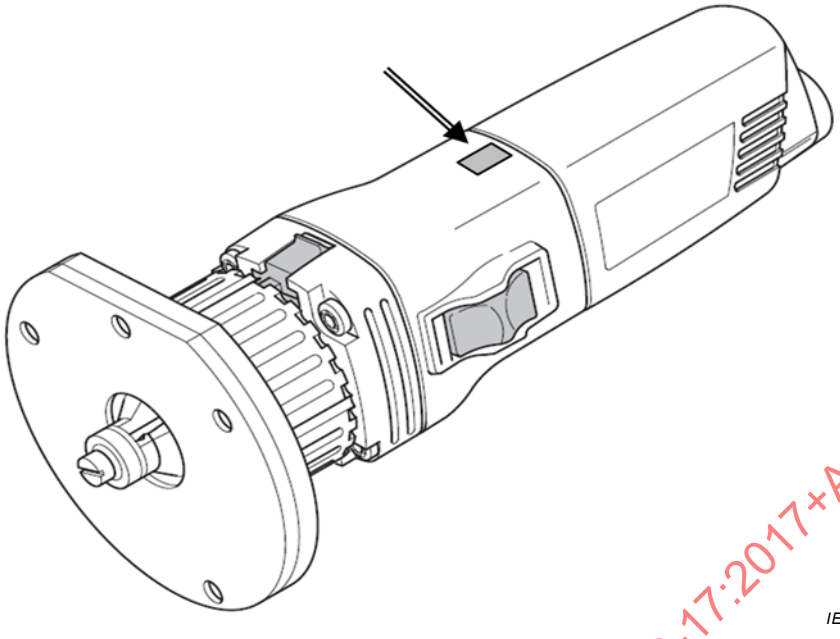



**Figure I.102 – Positions of transducers for type 1 routers**

# Annex K
(normative)

# Battery tools and battery packs

## K.1 Scope

*Addition:*

All clauses of this Part 2-17 apply unless otherwise specified in this annex.

**K.8.14.1.101** Item a) is not applicable.

**K.21.18.1.2** **Type 1 routers** are regarded as tools having a risk associated with inadvertent starting.

For **type 2 routers**, two separate and dissimilar actions shall be necessary before the motor is switched on (e.g. a **power switch** which has to be pushed in before it can be moved laterally to close the contacts to start the motor). It shall not be possible to achieve these two actions with a single grasping motion or a straight line motion.

*Compliance is checked by inspection and by manual test.*

NOTE In Europe (EN 62841-2-17), the following additional subclause applies:

**K.21.18.Z101 Isolation and disabling device**

Tools with an **integral battery** shall either be equipped

– with an isolation device to prevent the risk of injury from mechanical hazards during servicing or **user maintenance**; or

– with a disabling device that prevents unintentional starting of the tool.

An isolation device shall

– provide disconnection of all poles of the **battery** from the serviceable region of the tool;

– be equipped with an unambiguous indication of the state of the disconnection device which corresponds to each position of its manual control (actuator);

– be provided with protection against accidental reconnection.

NOTE 1 Examples of methods to achieve this disconnection include removable jumpers, **integral batteries** that can be disconnected for servicing or **user maintenance**, or an electromechanical **power switch** with a direct mechanical link between the actuator and the contact.

NOTE 2 The risk of accidental reconnection for a **power switch** is addressed by the requirement of 21.18.1.2. The other examples in NOTE 1 achieve this by the necessary actions for reconnection.

A disabling device may be achieved by any of the following:

– a self-restoring or non-self-restoring lock-off device where two separate and dissimilar actions are necessary before the motor is switched on (e.g. a **power switch** which has to be pushed in before it can be moved laterally to close the contacts to start the motor). It shall not be possible to achieve these two actions with a single grasping motion or a straight line motion;

– a removable disabling device provided with the tool where it shall not be possible for the tool to be operated when either applied or removed.

*Compliance is checked by inspection and by manual test.*

# Annex L
(normative)

# Battery tools and battery packs provided with mains connection or non-isolated sources

## L.1 Scope

*Addition:*

All clauses of this Part 2-17 apply unless otherwise specified in this annex.

**L.21.18.1.2 Type 1 routers** are regarded as tools having a risk associated with inadvertent starting.

For **type 2 routers**, two separate and dissimilar actions shall be necessary before the motor is switched on (e.g. a **power switch** which has to be pushed in before it can be moved laterally to close the contacts to start the motor). It shall not be possible to achieve these two actions with a single grasping motion or a straight line motion.

*Compliance is checked by inspection and by manual test.*

NOTE In Europe (EN 62841-2-17), the following additional subclause applies:

**L.21.18.Z101 Isolation and disabling device**

Tools with an **integral battery** shall either be equipped

– with an isolation device to prevent the risk of injury from mechanical hazards during servicing or **user maintenance**; or

– with a disabling device that prevents unintentional starting of the tool.

An isolation device shall

– provide disconnection of all poles of the **battery** from the serviceable region of the tool;

– be equipped with an unambiguous indication of the state of the disconnection device which corresponds to each position of its manual control (actuator);

– be provided with protection against accidental reconnection.

NOTE 1 Examples of methods to achieve this disconnection include removable jumpers, **integral batteries** that can be disconnected for servicing or **user maintenance**, or an electromechanical **power switch** with a direct mechanical link between the actuator and the contact.

NOTE 2 The risk of accidental reconnection for a **power switch** is addressed by the requirement of 21.18.1.2. The other examples in NOTE 1 achieve this by the necessary actions for reconnection.

A disabling device may be achieved by any of the following:

– a self-restoring or non-self-restoring lock-off device where two separate and dissimilar actions are necessary before the motor is switched on (e.g. a **power switch** which has to be pushed in before it can be moved laterally to close the contacts to start the motor). It shall not be possible to achieve these two actions with a single grasping motion or a straight line motion;

– a removable disabling device provided with the tool where it shall not be possible for the tool to be operated when either applied or removed.

*Compliance is checked by inspection and by manual test.*

## Bibliography

The bibliography of Part 1 is applicable, except as follows:

*Addition:*

IEC 62841-2-19, *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 2-19: Particular requirements for hand-held jointers*[1]

IEC 62841-2-23, *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 2-23: Particular requirements for hand-held small rotary tools*[2]



1 Under consideration.

2 Under consideration.

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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# ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY –

## Part 2-17: Particular requirements for hand-held routers

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**This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.**

**IEC 62841-2-17 edition 1.1 contains the first edition (2017-08) [documents 116/335/FDIS and 116/342/RVD] and its amendment 1 (2025-02) [documents 116/858/FDIS and 116/881/RVD].**

**This Final version does not show where the technical content is modified by amendment 1. A separate Redline version with all changes highlighted is available in this publication.**

International Standard IEC 62841-2-17 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

This Part 2-17 is to be used in conjunction with the first edition of IEC 62841-1 (2014).

This Part 2-17 supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC standard: Particular requirements for hand-held routers.

Where a particular subclause of Part 1 is not mentioned in this Part 2-17, that subclause applies as far as relevant. Where this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

The terms defined in Clause 3 are printed in **bold typeface**.

Subclauses, notes and figures which are additional to those in Part 1 are numbered starting from 101.

A list of all parts of the IEC 62841 series, under the general title: *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety*, can be found on the IEC website.

The committee has decided that the contents of this document and its amendment will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

The National Committees are requested to note that for this document the stability date is 2019.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

NOTE The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 36 months from the date of publication.

# ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY –

## Part 2-17: Particular requirements for hand-held routers



## 1 Scope

This clause of Part 1 is applicable, except as follows:

*Addition:*

This part of IEC 62841 applies to hand-held **routers** intended for cutting slots into or shaping the edge of wood and analogous materials, plastics and non-ferrous metals except magnesium.

NOTE 101 **Routers** that are primarily used for trimming the edge of materials are also known as trimmers.

NOTE 102 **Routers** that are used to cut various materials through the rotary action are also known as rotary cutters.

This part of IEC 62841 does not apply to jointers.

NOTE 103 Jointers are covered by IEC 62841-2-19.

This part of IEC 62841 does not apply to small rotary tools.

NOTE 104 Small rotary tools are covered by IEC 62841-2-23.

## 2 Normative references

This clause of Part 1 is applicable.

## 3 Terms and definitions

This clause of Part 1 is applicable, except as follows:

*Additional definitions:*

**3.101**
**base**
part of the **router** that supports other parts of the tool on the workpiece

**3.102**
**rotary cutting bit**
rotating cutting **accessory** with a shank for mounting it into a collet having its main feed direction perpendicular to its axis of rotation

Note 1 to entry: There are **rotary cutting bits** that allow an additional plunging operation parallel to its axis of rotation.

**3.103**
**router**
tool which includes a motor housing, **base** and a collet, designed to be fitted with a **rotary cutting bit**

**3.104**
**trimmer**
**type 1 router** designed to be fitted with a rotary cutter and a base that allows for control of trimming the edge of laminate sheet or similar materials

**3.105**
**type 1 router**
**router** that has the following criteria:

a) a mass of the motor housing and collet, excluding the **base**, **supply cord**, any **separable battery pack** or any **detachable battery pack**, not exceeding 2 kg; and

b) a collet capacity not exceeding 8 mm

**3.106**
**type 2 router**
**router** that has the following criteria:

a) a mass of the motor housing and collet, excluding the **base**, **supply cord**, any **separable battery pack** or any **detachable battery pack**, exceeding 2 kg; or

b) a collet capacity exceeding 8 mm

## 4 General requirements

This clause of Part 1 is applicable.

## 5 General conditions for the tests

This clause of Part 1 is applicable, except as follows:

**5.17** *Addition:*

*The mass of the tool includes all handles and the dust extraction adapter, if any.*

## 6 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

## 7 Classification

This clause of Part 1 is applicable.

## 8 Marking and instructions

This clause of Part 1 is applicable, except as follows:

**8.1** *Addition:*

– **rated no-load speed.**

**8.14.1** *Addition:*

The additional safety instructions as specified in 8.14.1.101 shall be given. This part may be printed separately from the “General Power Tool Safety Warnings”.

**8.14.1.101 Safety instructions for routers**

a) **Hold the power tool by insulated gripping surfaces only, because the cutter may contact its own cord.** *Cutting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.*

b) **Use clamps or another practical way to secure and support the workpiece to a stable platform.** *Holding the work by your hand or against the body leaves it unstable and may lead to loss of control.*

**8.14.2** a) *Additional items:*

101) Information about the types of **rotary cutting bits** for which the tool is designed;

102) Information concerning the diameter of shank for which the collet(s) is intended;

103) Instruction to use only **rotary cutting bits** of the correct shank diameter for the collet mounted;

104) Instruction to use only **rotary cutting bits** suitable for the speed of the tool;

105) Instruction on how to change the collet or the collet cone (e.g. for setting up different shank diameters), if applicable.

**8.14.2** b) *Additional items:*

101) Instruction on the correct use of the dust collection system, if applicable.

## 9 Protection against access to live parts

This clause of Part 1 is applicable.

## 10 Starting

This clause of Part 1 is applicable.

## 11 Input and current

This clause of Part 1 is applicable.

## 12 Heating

This clause of Part 1 is applicable.

## 13 Resistance to heat and fire

This clause of Part 1 is applicable.

## 14 Moisture resistance

This clause of Part 1 is applicable.

## 15 Resistance to rusting

This clause of Part 1 is applicable.

## 16 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

## 17 Endurance

This clause of Part 1 is applicable.

## 18 Abnormal operation

This clause of Part 1 is applicable, except as follows:

**18.8** *Replacement of Table 4 by the following:*

**Table 4 – Required performance levels**

| Type and purpose of SCF | Minimum performance level (PL) |
|---|---|
| **Power switch** – prevent unwanted switch-on for **type 1 routers** | b |
| **Power switch** – prevent unwanted switch-on for **type 2 routers** | c |
| **Power switch** – provide desired switch-off | b |
| Any electronic control to pass the test of 18.3 | a |
| Overspeed prevention to prevent output speed above 130 % of **rated no-load speed** | b |
| Provide desired direction of rotation | a |
| Prevent exceeding thermal limits as in 18.4 and 18.5.3 | a |
| Prevent self-resetting as required in 23.3 for **type 1 routers** | a |
| Prevent self-resetting as required in 23.3 for **type 2 routers** | b |
| Prevent unwanted lock-on of the **power switch** function | b |
| Lock-off function as required by 21.18.1.2 for **type 1 routers** | a |
| Lock-off function as required by 21.18.1.2 for **type 2 routers** | b |
| NOTE In Europe (EN 62841-2-17), the following additional requirement applies:<br>Restart prevention as required by 21.18.1.1 | b |

## 19 Mechanical hazards

This clause of Part 1 is applicable, except as follows:

**19.1** *Replacement of the first paragraph:*

Moving and dangerous parts other than the **rotary cutting bit** and the collet shall be so positioned or enclosed to provide adequate protection against personal injury. The protection of the user against accidental contact with the **rotary cutting bit** and the collet is provided by the requirements of 19.4.101.

**19.4** *Replacement:*

**Type 1 routers** shall have at least one handle or grasping surface. The motor housing and/or parts of the **base** that assist in guiding the **router** in use may be considered as a grasping surface, if identified as such in accordance with 8.14.2 b) 6).

**Type 2 routers** shall have at least one handle and an additional handle or grasping surface to allow the operation of the tool with two hands. The motor housing and/or parts of the **base** that assist in guiding the **router** in use may be considered as a grasping surface, if identified as such in accordance with 8.14.2 b) 6).

*Compliance is checked by inspection.*

### 19.4.101 Prevention of inadvertent contact

The handles shall be so shaped or located as to minimise the risk of inadvertent contact of the user's hand with the **rotary cutting bit** and the collet.

For **type 1 routers**, a removable cover for the purpose of changing the **accessory** which is provided to meet the requirements of 19.4.101 may be removable without the aid of a tool.

For handle(s), inadvertent contact of the user's hand is considered to be prevented if there is sufficient distance between a defined measuring point on the handle surface and the **rotary cutting bit** and the collet.

*Compliance is checked as follows:*

*A test pin with a diameter of the largest collet size is mounted to the tool. A mark is applied around the test pin (10 ± 1) mm from the collet. The distance between the defined measuring point and the mark on the test pin shall be at least 120 mm. The measurement shall be carried out as a chain distance. See Figure 101.*

*With the **base** set to maximum depth of cut, to establish the measuring point on the handle(s), follow the outlined procedure below.*

a) *Establish the closest (A) and the most distant (B) points from the plane of the **base** on the handle. Equidistant between points (A) and (B), draw the horizontal intersecting line on the plane parallel with the **base** and the surface of the handle.*

b) *The point on the intersecting line of the handle surface with the largest radial distance from the centreline of the spindle is the defined measuring point.*

For a motor housing and/or parts of the **base** used as a grasping surface, inadvertent contact of the user's hand is considered to be prevented by a barrier located between the grasping surface and the **rotary cutting bit**, see Figure 102. The barrier shall have a height *x* of at least 6 mm. A dust collecting system may be part of this barrier.

Alternatively to a barrier, for a motor housing and/or parts of the **base** used as a grasping surface in a **type 1 router** with an open portion(s) above the **base**, inadvertent contact of the user's hand is also considered to be prevented if either

– the **rotary cutting bit** and the collet are not accessible above the **base** by means of the test probe B of IEC 61032:1997 with a force not exceeding 5 N;

or

– there is a minimum distance of 60 mm between
  - a point located 40 mm above the lower edge of the grasping surface area in accordance with 8.14.2 b) 6) along its centreline; and
  - any point on the edge of any open portion (see Figure 103).

*Compliance is checked by manual test using test probe B of IEC 61032:1997 and by measurement. No covers are removed for the manual test. The 60 mm measurement is carried out as a chain distance.*

*Adjustment elements capable of being readjusted while the tool is operating, e.g. "revolving depth gauge", shall be located so that touching of rotating parts is avoided.*

*Compliance is checked by inspection.*

**19.6** This subclause of Part 1 is applicable.

**19.101** **Type 2 routers** shall be provided with a **base** which is capable of being adjusted to surround the **rotary cutting bit** so as to provide sufficient stability during **normal operation**.

*Compliance is checked by inspection and by the following test.*

*For the test, the tool is prepared as follows:*

- *the motor is switched off;*
- *no **rotary cutting bit** is installed;*
- *the tool is adjusted such that the collet is at the highest position;*
- *tools provided with an appliance inlet are fitted with an appropriate connector and flexible cable or cord.*

*The tool is placed in its most unfavourable position with its **base** resting on a plane that is inclined at an angle of 10° to the horizontal. The cable or cord, if any, shall rest on the inclined plane in the most unfavourable position. For the test, the tool is prevented from sliding.*

*The tool shall not tip over.*

**19.102** **Type 1 routers** shall be provided with a **base** so as to provide guidance during operation.

*Compliance is checked by inspection.*

## 20 Mechanical strength

This clause of Part 1 is applicable.

## 21 Construction

This clause of Part 1 is applicable, except as follows:

**21.18.1** *Addition:*

For **routers**, **power switches** other than **momentary power switches** are permitted.

**21.18.1.1** *Addition:*

NOTE In Europe (EN 62841-2-17), the following additional requirement applies:

For **routers**, either

- the **power switch** shall be a **momentary power switch** without having a locking arrangement in the "on" position

or

- the tool shall not restart after an interruption of the mains supply without releasing and re-actuating the **power switch**.

**21.18.1.2** *Addition:*

**Routers** are regarded as tools having a risk associated with inadvertent starting.

**21.35** This subclause of Part 1 is applicable for all **routers** except for **trimmers**.

*Addition:*

An integral dust collection/suction device or dust outlet(s) may be removable without the use of a tool.

## 22 Internal wiring

This clause of Part 1 is applicable.

## 23 Components

This clause of Part 1 is applicable, except as follows:

**23.3** *Replacement of the first paragraph:*

Protection devices or circuits shall be of the non-self-resetting type unless the tool is equipped with a **momentary power switch** with no provision for being locked in the "on" position.

## 24 Supply connection and external flexible cords

This clause of Part 1 is applicable.

## 25 Terminals for external conductors

This clause of Part 1 is applicable.

## 26 Provision for earthing

This clause of Part 1 is applicable.

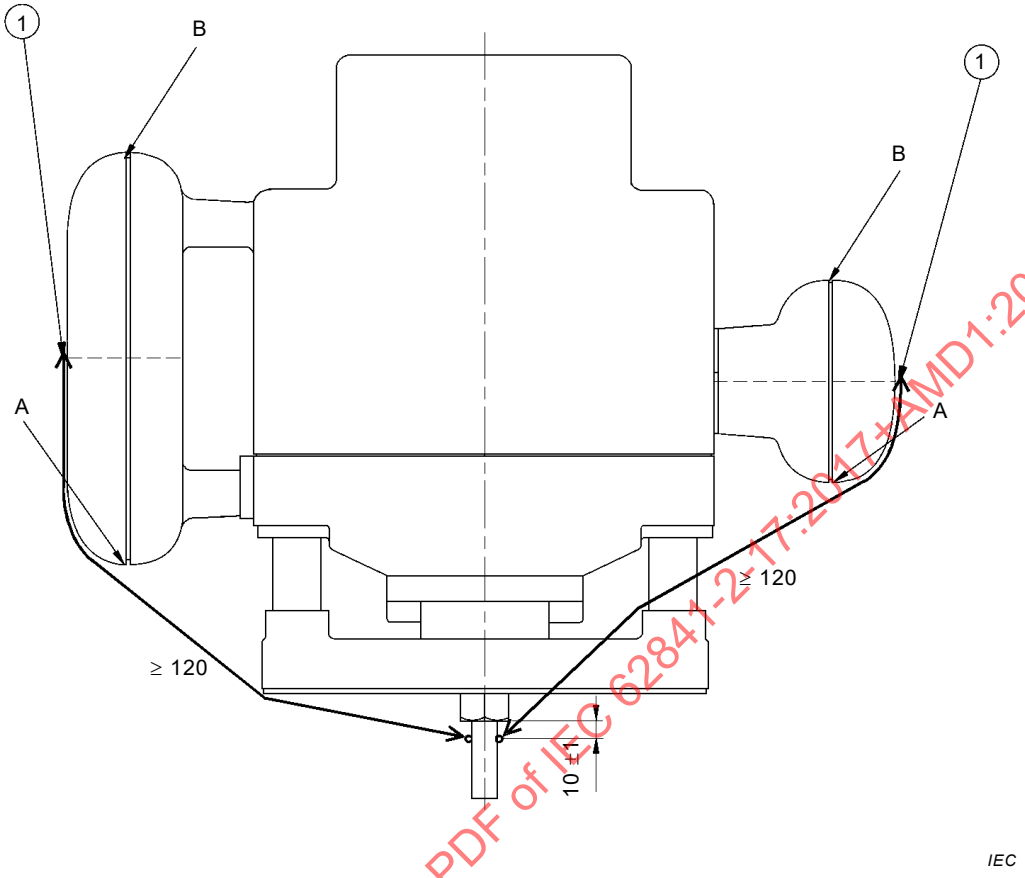
## 27 Screws and connections

This clause of Part 1 is applicable.

## 28 Creepage distances, clearances and distances through insulation

This clause of Part 1 is applicable.

*Dimensions in millimetres*

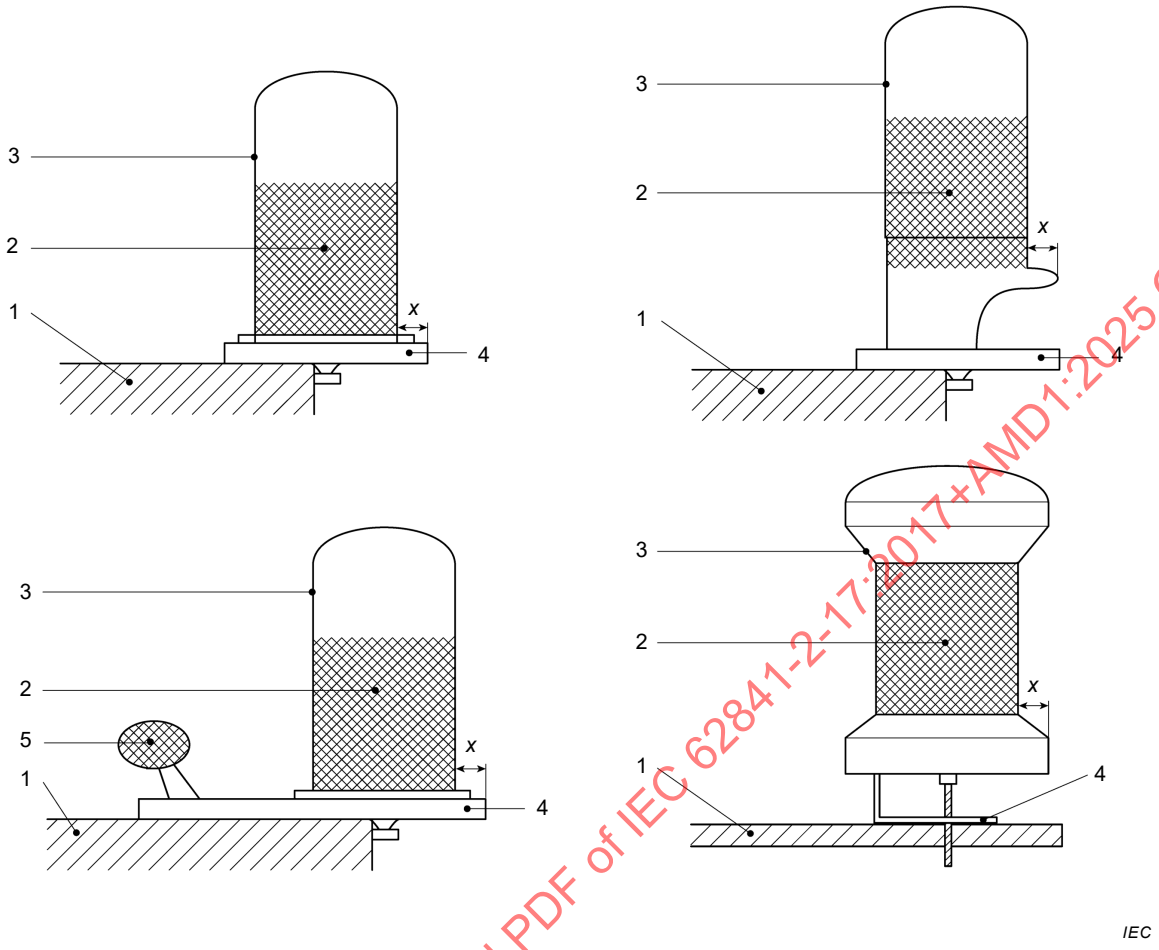



**Key**

1 defined measuring points

A, B reference points

**Figure 101 – Measurement of distance between handle and rotary cutting bit**




**Key**

1 workpiece
2 grasping surface
3 motor housing
4 **base**
5 auxiliary handle
*x* height of a barrier

**Figure 102 – Various designs with barrier**