UL 62841-2-17

STANDARD FOR SAFETY

Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-17: Particular Requirements for Hand-Held Routers

UL Standard for Safety for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-17: Particular Requirements for Hand-Held Routers, UL 62841-2-17

First Edition, Dated September 7, 2018

Summary of Topics

Adoption of the First Edition of IEC 62841-2-17, Standard for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-17: Particular Requirements for Hand-Held Routers, as the First Edition of UL 62841-2-17.

This standard is an adoption of IEC 62841-2-17, Edition 1, published by the IEC August 2017. There are no technical national differences for this standard.

The new requirements are substantially in accordance with Proposal(s) on this subject dated May 25, 2018.

No Text on This Page

CSA Group

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First Edition
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Underwriters Laboratories Inc.
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First Edition

Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-17: Particular Requirements for Hand-Held Routers

September 7, 2018

This national standard is based on publication IEC 62841-2-17, First Edition (2017).

Approved American National Standard

ANSI

ANSI/UL 62841-2-17-2018

NATIONAL STANDARD OF CANADA
STANDARDS COUNCIL OF CANADA
CONSEIL CANADIEN DES NORMES
NORME NATIONALE DU CANADA

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This standard is issued jointly by the Canadian Standards Association (operating as "CSA Group"), and Underwriters Laboratories Inc. (UL). Comments or proposals for revisions on any part of the standard may be submitted to CSA Group or UL at anytime. Revisions to this standard will be made only after processing according to the standards development procedures of CSA Group and UL. CSA Group and UL will issue revisions to this standard by means of a new edition or revised or additional pages bearing their date of issue.

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This Standard is subject to review within five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. The technical content of IEC and ISO publications is kept under constant review by IEC and ISO. To submit a proposal for change, please send the following information to inquires@csagroup.org and include "Proposal for change" in the subject line: Standard designation (number); relevant clause, table, and/or figure number; wording of the proposed change; and rationale for the change.

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This ANSI/UL Standard for Safety consists of the First Edition. The most recent designation of ANSI/UL 62841-2-17 as an American National Standard (ANSI) occurred on September 7, 2018. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface. The National Difference Page and IEC Foreword are also excluded from the ANSI approval of IEC-based standards.

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PREFACE

This is the harmonized CSA Group and UL standard for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-17: Particular Requirements for Hand-Held Routers. It is the first edition of CAN/CSA-C22.2 No. 62841-2-17, and the first edition of UL 62841-2-17.

This harmonized standard is based on IEC Publication 62841-2-17: First edition, Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 2-17: Particular requirements for hand-held routers, issued August 2017. IEC 62841-2-17 is copyrighted by the IEC.

This harmonized standard was prepared by CSA Group and Underwriters Laboratories Inc. (UL). The efforts and support of the International Harmonization Committee (IHC) for the adoption of the IEC series of standards for Hand-Held, Motor-Operated, and Transportable Tools and Lawn and Garden Machinery are gratefully acknowledged.

This standard is considered suitable for use for conformity assessment within the stated scope of the standard.

This standard was reviewed by the CSA Subcommittee on Safety of Hand-Held Motor-Operated Electric Tools, under the jurisdiction of the CSA Technical Committee on Consumer and Commercial Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee. This standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

Application of Standard

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

CAN/CSA-C22.2 No. 62841-2-17 is to be used in conjunction with the First edition of CAN/CSA-C22.2 No. 62841-1. The requirements for hand-held routers are contained in this Part 2 Standard and CAN/CSA-C22.2 No. 62841-1. Requirements of this Part 2 Standard, where stated, amend the requirements of CAN/CSA-C22.2 No. 62841-1. Where a particular subclause of CAN/CSA-C22.2 No. 62841-1 is not mentioned in CAN/CSA-C22.2 No. 62841-2-17, the CAN/CSA-C22.2 No. 62841-1 subclause applies.

UL Standard 62841-2-17 is to be used in conjunction with the First edition of UL 62841-1. The requirements for hand-held routers are contained in this Part 2 Standard and UL 62841-1. Requirements of this Part 2 Standard, where stated, amend the requirements of UL 62841-1. Where a particular subclause of UL 62841-1 is not mentioned in UL 62841-2-17, the UL 62841-1 subclause applies.

Level of Harmonization

This standard adopts the IEC text with editorial national differences.

This standard is published as an equivalent standard for CSA Group and UL.

An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

All national differences from the IEC text are included in the CSA Group and UL versions of the standard. While the technical content is the same in each organization's version, the format and presentation may differ.

Reasons for Differences From IEC

National Differences from the IEC are being added in order to address safety and regulatory situations present in the US and Canada.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

IEC Copyright

For CSA Group, the text, figures, and tables of International Electrotechnical Commission Publication 62841-2-17, Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – safety – Part 2-17: Particular requirements for hand-held routers, copyright 2017, are used in this standard with the consent of the International Electrotechnical Commission. The IEC Foreword is not a part of the requirements of this standard but is included for information purposes only.

NATIONAL DIFFERENCES

National Differences from the text of International Electrotechnical Commission (IEC) Publication 62841-2-17, Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-17: Particular Requirements for Hand-Held Routers, copyright 2017 are indicated by notations (differences) and are presented in bold text. The national difference type is included in the body.

There are five types of National Differences as noted below. The difference type is noted on the first line of the National Difference in the standard. The standard may not include all types of these National Differences.

DR – These are National Differences based on the **national regulatory requirements**.

D1 – These are National Differences which are based on **basic safety principles and requirements**, elimination of which would compromise safety for consumers and users of products.

D2 – These are National Differences from IEC requirements based on existing **safety practices**. These requirements reflect national safety practices, where empirical substantiation (for the IEC or national requirement) is not available or the text has not been included in the IEC standard.

DC – These are National Differences based on the **component standards** and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE – These are National Differences based on **editorial comments or corrections**.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY – Part 2-17: Particular requirements for hand-held routers

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.

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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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

The text of this standard is based on the following documents:

FDIS	Report on voting
116/335/FDIS	116/342/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

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 will remain unchanged until the stability date indicated on the IEC web site under ″http://webstore.iec.ch″ in the data related to the specific document. At this date, the document will be

• reconfirmed,

• withdrawn,

• replaced by a revised edition, or

• amended.

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.

101DV DE *Modification: Add the following to the IEC Foreword:*

The numbering system in the standard uses a space instead of a comma to indicate thousands and uses a comma instead of a period to indicate a decimal point. For example, 1 000 means 1,000 and 1,01 means 1.01.

102DV DE *Modification: Add the following to the IEC Foreword:*

For this Standard, all references to ″Part 1″ refer to CAN/CSA-C22.2 No. 62841-1 and UL 62841-1.

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:

Addition definitions:

3.101
base
part supporting the **router** 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 **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**, 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**, 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	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: 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.

19.101 **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:

21.18.1.1 *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.

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.

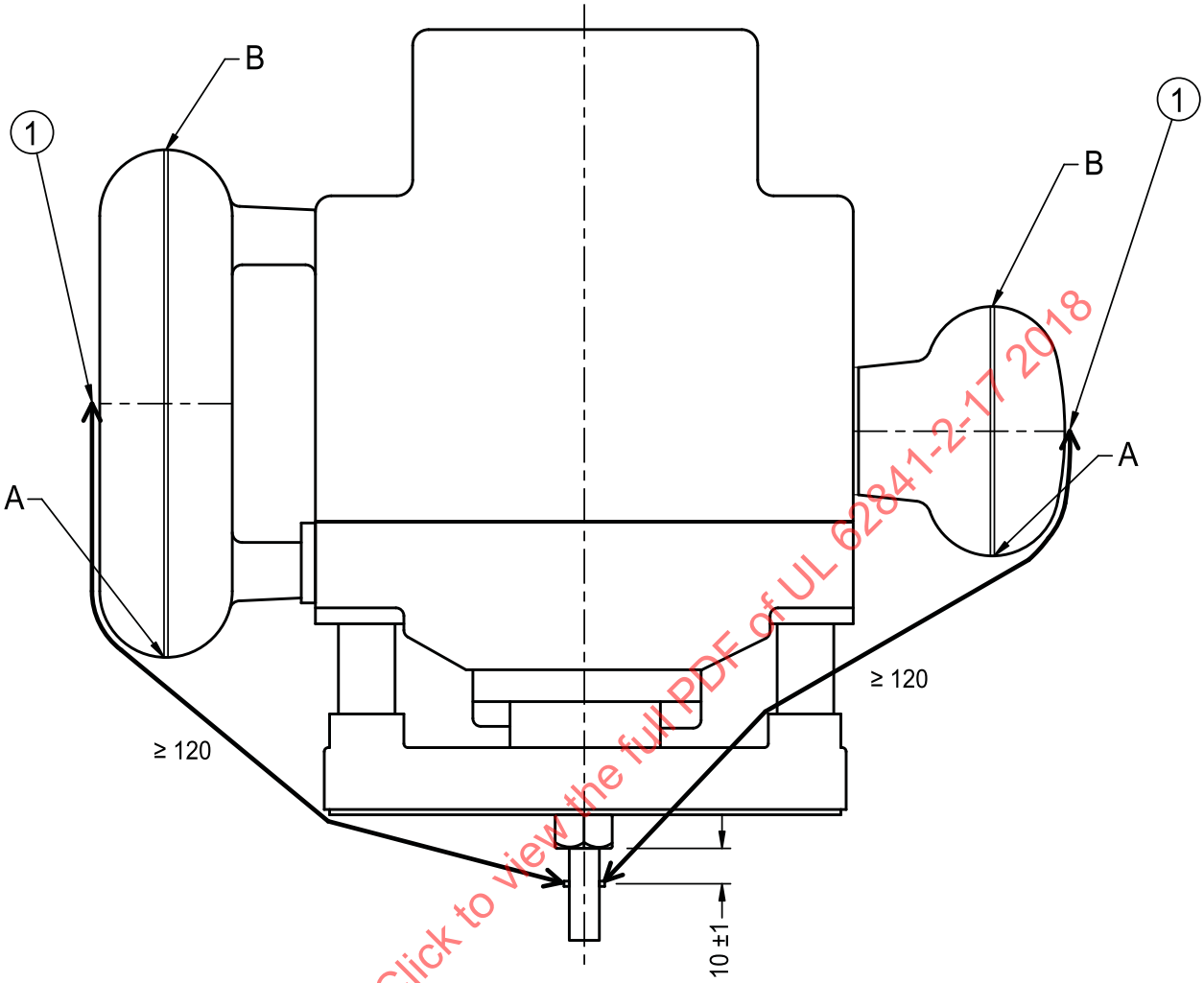
27 Screws and connections

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



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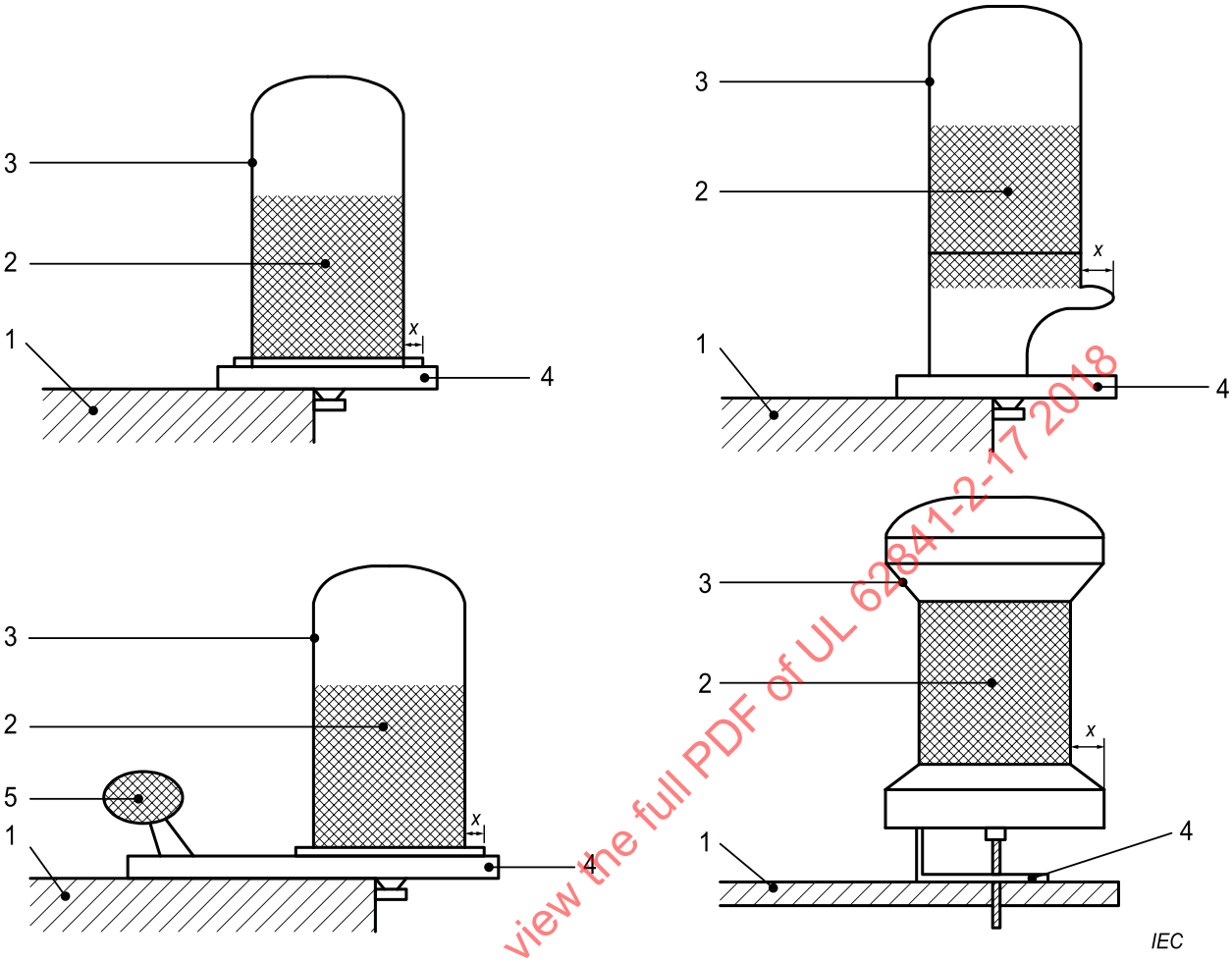
Key

1 defined measuring points

A, B reference points

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



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Key

1 workpiece

2 grasping surface

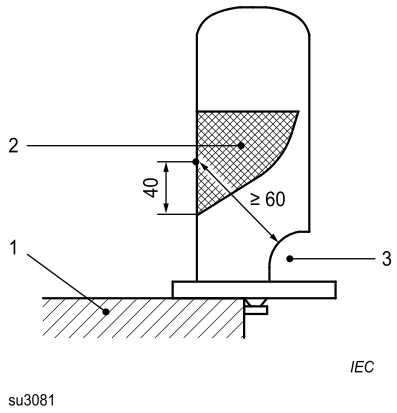
3 motor housing

4 **base**

5 auxiliary handle

x height of a barrier

Figure 102 – Various designs with barrier



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). 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 Ø 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.3.5.3 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.

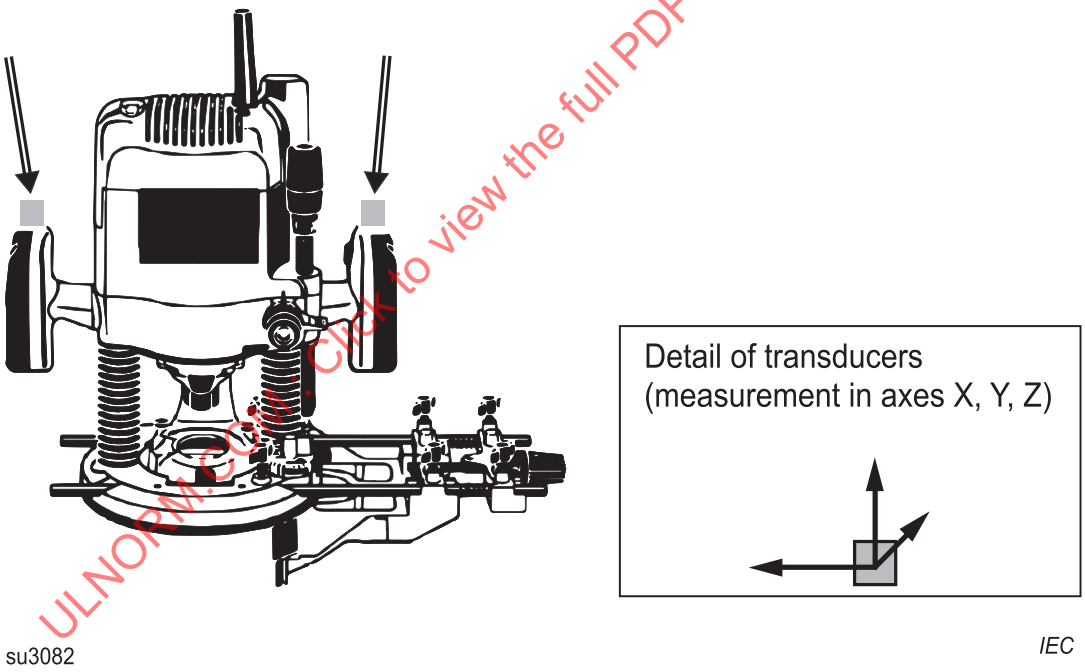


Figure I.101 – Positions of transducers for type 2 routers