UL 60745-2-14

STANDARD FOR SAFETY

Hand-Held Motor-Operated Electric Tools – Safety – Part 2-14: Particular Requirements for Planers

UL Standard for Safety for Hand-Held Motor-Operated Electric Tools – Safety – Part 2-14: Particular Requirements for Planers, UL 60745-2-14

Second Edition, Dated March 26, 2004

Summary of Topics

This revision of ANSI/UL 60745-2-14 dated June 17, 2020 is being issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.

As noted in the Commitment for Amendments statement located on the back side of the title page, UL and CSA are committed to updating this harmonized standard jointly. However, the revision pages dated June 17, 2020 will not be jointly issued by UL and CSA as these revision pages only address UL ANSI approval dates.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The requirements are substantially in accordance with Proposal(s) on this subject dated March 27, 2020.

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March 26, 2004

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This national standard is based on publication IEC 60745-2-14, Edition 2.2 (2010).

Amendment 2:2010 (IDT) to National Standard of Canada

ANSI/UL 60745-2-14-2011 (R2020)

Commitment for Amendments

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. To submit a proposal for change, please send the following information to inquiries@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 Second Edition including revisions through June 17, 2020. The most recent designation of ANSI/UL 60745-2-14 as a Reaffirmed American National Standard (ANS) occurred on June 17, 2020. 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 common CSA and UL standard for hand-held motor-operated electric tools. It is the second edition of CAN/CSA-C22.2 No. 60745-2-14 and the second edition of UL 60745-2-14. This standard is based on IEC 60745-2-14, second edition.

This common standard was prepared by the Canadian Standards Association (CSA) and Underwriters Laboratories Inc. (UL).

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 approved as a National Standard of Canada by the Standards Council of Canada and has been approved by the American National Standards Institute (ANSI) as an American National Standard.

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.

A UL standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest set of revised requirements.

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

Level of harmonization

This standard adopts the IEC text with national differences. This standard is published as an equivalent standard for CSA 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.

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 literal interpretation 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.

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NATIONAL DIFFERENCES

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.

In the CSA and UL publications of this standard, National Differences from the text of International Electrotechnical Commission (IEC) Publication 60745-2-14, Safety Requirements for Hand-Held Motor-Operated Electrical Tools – Safety – Part-2-14: Particular Requirements for Planers, copyright 2010 are indicated by notations (differences) and are presented in bold text. The national difference type is included in the body.

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.

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FOREWORD

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HAND-HELD MOTOR-OPERATED ELECTRIC TOOLS – SAFETY – PART 2-14: Particular requirements for planers

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.

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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.

This part of International Standard IEC 60745 has been prepared by subcommittee 61F: Safety of hand-held motor-operated electric tools, of IEC technical committee 61: Safety of household and similar electrical appliances.

This consolidated version of IEC 60745-2-14 consists of the second edition (2003) [documents 61F/467/FDIS and 61F/491/RVD], its amendment 1 (2006) [documents 61F/633/FDIS and 61F/642/RVD] and its amendment 2 (2010) [documents 116/35/FDIS and 116/43/RVD].

The technical content is therefore identical to the base edition and its amendments and has been prepared for user convenience.

It bears the edition number 2.2.

A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2.

The French version of this standard has not been voted upon.

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

This part 2 is to be used in conjunction with the latest edition of IEC 60745-1, Hand-held motor-operated electric tools – Safety – Part 1: General requirements, and its amendments. It was established on the basis of the third edition (2001) of that standard.

NOTE 1 When “Part 1” is mentioned in this standard, it refers to IEC 60745-1.

This part 2 supplements or modifies the corresponding clauses of IEC 60745-1, so as to convert that publication into the IEC standard: Safety requirements for electric planers.

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

NOTE 2 The following numbering system is used:

– subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;

– additional annexes are lettered AA, BB, etc.

NOTE 3 In this standard, the following print types are used:

– requirements: in roman type;

– *test specifications: in italic type*;

– notes: in smaller roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

The committee has decided that the contents of the base publication and its amendments 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 publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition; or
- amended.

HAND-HELD MOTOR-OPERATED ELECTRIC TOOLS – SAFETY – PART 2-14: PARTICULAR REQUIREMENTS FOR PLANERS

1 Scope

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

Addition:

This standard applies to planers.

2 Normative references

This clause of part 1 is applicable.

3 Terms and Definitions

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

3.101 planer: tool intended for removing surface material, equipped with a rotating cutting head where the axis of the cutting head is parallel to the base plate

3.102 lift-off device: device which keeps the blade(s) from making contact when the planer is placed on a flat surface

3.103 cutting head: assembly of blades, cutter block, blade fixing elements, relevant screws and spindle, the whole being ready for working

4 General requirements

This clause of part 1 is applicable.

5 General conditions for the tests

This clause of part 1 is applicable.

6 Void

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:*

– direction of rotation of the working spindle. This shall be indicated on the tool by an arrow, raised or sunk, or by other means no less visible and indelible;

– rated no load speed.

8.12.1.1 *Addition:*

Planer safety warnings:

– Wait for the cutter to stop before setting the tool down. *An exposed rotating cutter may engage the surface leading to possible loss of control and serious injury.*

NOTE The above warning applies only to planers without an automatic closing guard.

– 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.*

– 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.*

8.12.1DV D1 *National Difference Deleted*

8.12.2 *Addition:*

The instruction sheet shall also contain the following information:

– instructions for the changing of the blades and their adjustment to the correct position;

– types of cutting heads which can be used, 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, except as follows:

12.4 *Replacement:*

The tool is operated at rated input or rated current for 30 min. The temperature rises are measured at the end of the 30 min.

13 Leakage current

This clause of part 1 is applicable.

14 Moisture resistance

This clause of part 1 is applicable.

15 Electric strength

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.

19 Mechanical hazards

This clause of Part 1 is applicable except as follows:

19.1 *Addition:*

For the requirements given in 19.106, 19.107, and 19.108, only the test probe shown in Figure 102 is used.

19.101 The blades when aligned with the fixed shoe shall not project by more than 1,1 mm radially beyond the cutter block (as per dimension "a" in Figure 101).

Compliance is checked by measurement.

19.102 At any depth of cut, the distance "b" (see Figure 101) between the rotating circle of the cutting edges and the trailing edge on the side of the adjustable shoe shall not exceed 5 mm measured radially.

Compliance is checked by measurement and by inspection.

19.103 The blades shall be secured in the cutter block in such a way that friction alone is not relied upon to prevent the ejection of the blades.

Compliance is checked by measurement and by inspection.

19.104 Cutting heads shall be designed and made of such materials that they withstand the forces and loads expected in normal use.

Compliance is checked by the following test:

An overspeed test shall be made on a sample cutting head, equipped with blades for the largest cutting diameter and the largest cutting edge width, the test speed being 1,5 times the rated no-load speed. If applicable, tension elements such as clamping screws shall be tightened in accordance with the instructions required by 8.12.2.

After the test, the cutting headshall not be deformed or cracked, no screws shall be loosened and displacements of detachable parts shall be less than specified in the test procedure.

The test procedure is as follows:

1) Measure the cutting head dimensions.

2) Bring the cutting head to the rated no-load speed, for 1 min.

3) Stop and re-measure the cutting head; measured displacements of the detachable parts of the cutting head shall not be greater than 0,15 mm.

4) Bring the cutting head to the test speed, for 1 min.

5) Stop and re-measure the cutting head and compare the results with those obtained from step 3. The compared displacements shall not exceed 0,15 mm.

19.105 The clamping screws or other tensile loaded blade fixing elements used to secure the blades in the cutter block shall be made of steel with a hardness of at least 20 HRC and a tensile strength of at least 800 N/mm^2.

Clamping screws or bolts shall not project beyond the cutter block as shown in Figure 101.

Compliance is checked by verification of the material specification and by inspection.

19.106 It shall not be possible to touch rotating parts from the sides of the planer.

Compliance is checked by the following test:

The planer is positioned with the shoes resting on a flat surface. The accessibility of rotating parts is checked by means of the test probe shown in Figure 102.

19.107 Planers with rabbeting facilities shall be provided with a guard that avoids inadvertent contact at the sides with the blades.

Compliance is checked by inspection and by applying the test probe of Figure 102 without any force with the planer in the same position as required in 19.106.

19.108 It shall not be possible to touch the blades through the chip ejection opening.

Compliance is checked by testing all apertures for chip ejection with the test probe of Figure 102. It shall not be possible to touch the blades in the cutting head at any angle of the probe.

19.109 If a parallel guide is provided, its guiding and top surface shall have no openings or projections. Openings having a maximum dimension not exceeding 10 mm are disregarded.

Planers may be provided with an integrated non-detachable and non-lockable guard which automatically moves to the closed position, where it covers the whole width of the cutting head, when the planer is not in use.

The guard provided shall return automatically to the closed position at the end of the planing operation. The parallel guide and guard shall be so designed that for any cutting width the unused part of the cutting head is covered.

Any contact between guards manufactured from steel and other hard materials and the blades is to be avoided. If either the guard or parallel guide is designed in such a way that elimination of contact with the cutting head cannot be ensured, they shall be manufactured from soft material (e.g. aluminium, plastic, wood).

Compliance is checked by inspection.

NOTE Examples of parallel guide and guard are given in Figure 103.

19.110 Planers shall stop within 10 s of switching off, unless the tool is fitted with an automatic closing guard.

Compliance is checked by inspection and by measurement.

19.111 If a lift-off device is provided, it shall be designed so that

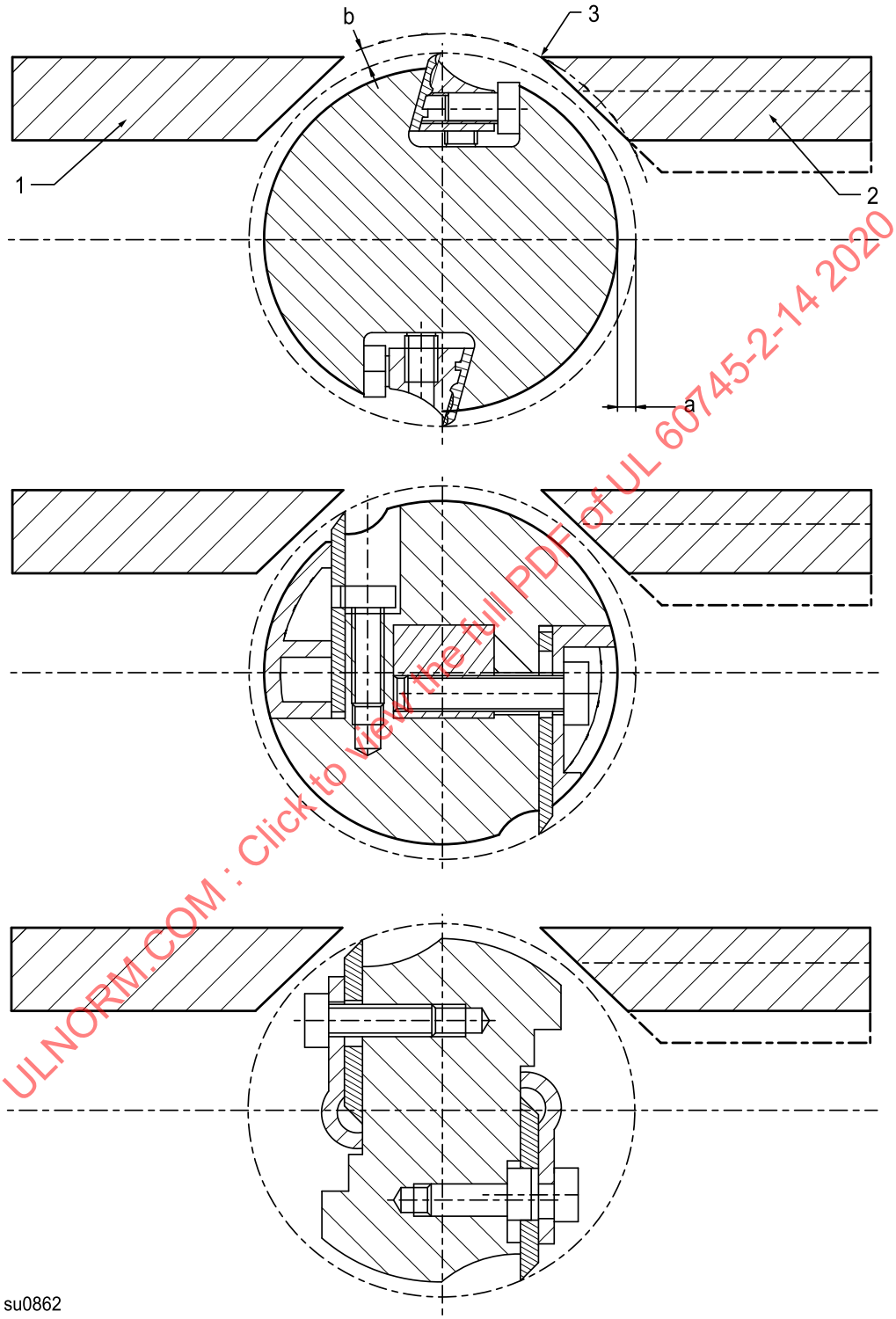
– it is automatically activated, when the planer is lifted up from a horizontal surface, and

– the blade(s) do not make contact, when the planer is set at maximum depth of cut and placed on a horizontal surface.

Compliance is checked by inspection.

Figure 101

Examples of cutting heads with basic dimensions and clearance distances



Key

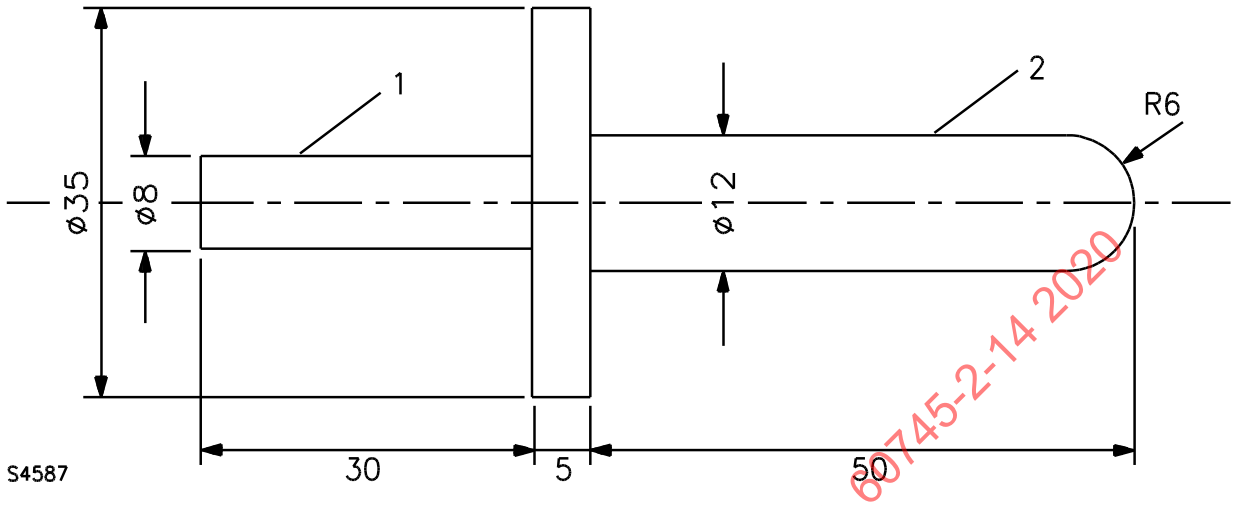
1 Fixed shoe

2 Adjustable shoe

3 Trailing edge

Figure 102

Test probe



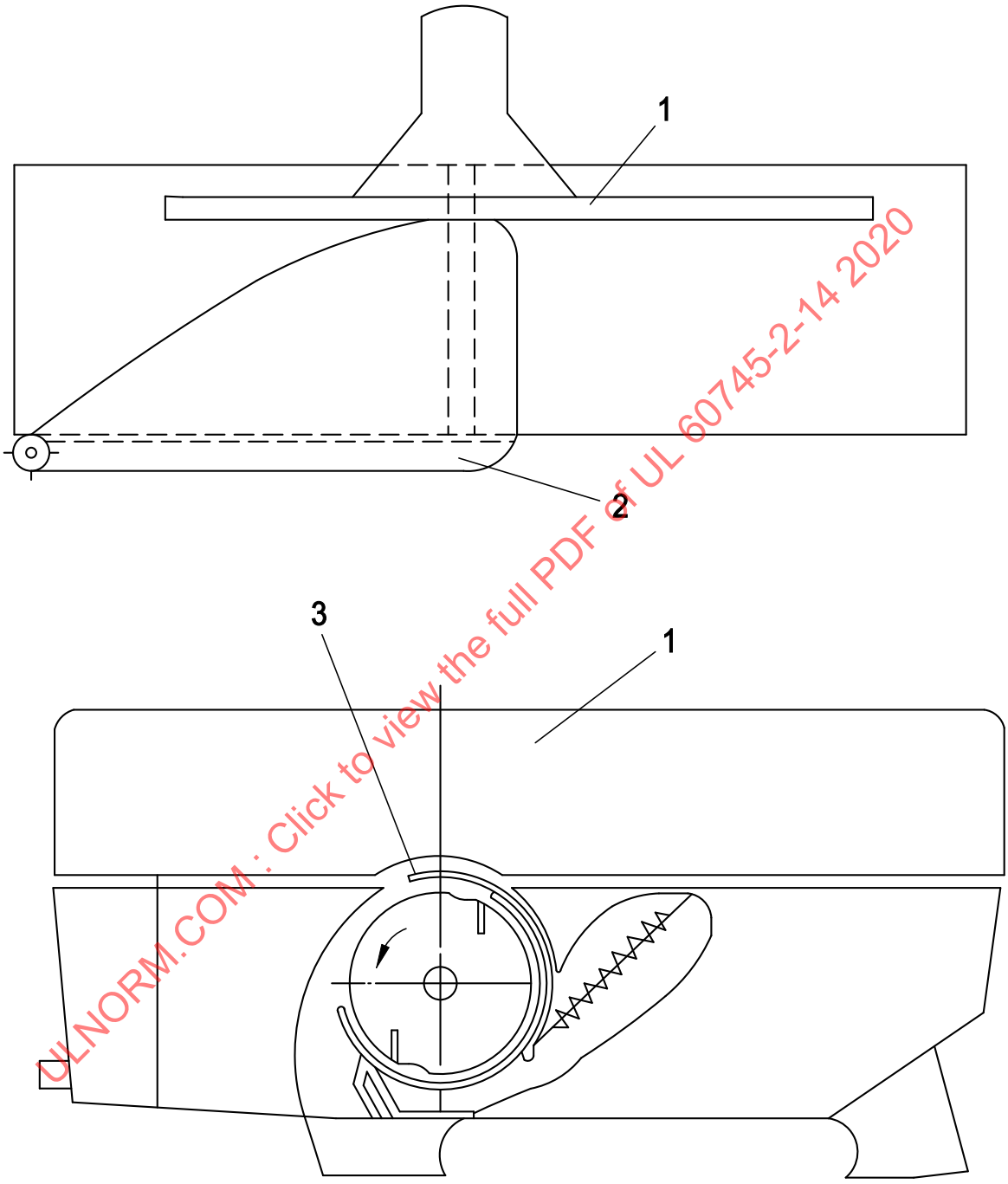
Key

1 Handle section

2 Test section

Figure 103

Examples of parallel guide and guard



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Key

1 Parallel guide

2 Guard

3 Integral guard

20 Mechanical strength

This clause of part 1 is applicable.

21 Construction

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

21.18 *Addition:*

For planers which have neither an automatic closing guard nor a lift-off device, the mains switch shall switch off the motor automatically as soon as the actuating member of the switch is released. For these tools, the switch shall have no arrangement to lock it in the "on" position.

For planers which have either an automatic closing guard or a lift-off device, the mains switch may be lockable in the "on" position.

For planers without an automatic closing guard or lift-off device, the mains switch shall incorporate a device in the "off" position which requires two separate sequential operations before the switch will operate.

Compliance is checked by inspection and by manual test.

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.