



UL 62841-2-10

STANDARD FOR SAFETY

Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-10: Particular Requirements For Hand-Held Mixers

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UL Standard for Safety for Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Part 2-10: Particular Requirements For Hand-Held Mixers, UL 62841-2-10

First Edition, Dated October 27, 2017

Summary of Topics

This revision of ANSI/UL 62841-2-10 dated September 23, 2022 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.

This standard is an adoption of IEC 62841-2-10, Edition 1, published by the IEC February 2017. There are no technical national differences for this standard.

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 September 23, 2022 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 July 29, 2022.

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CSA Group
CAN/CSA-C22.2 No. 62841-2-10:17
First Edition
(IEC 62841-2-10:2017 MOD)



Underwriters Laboratories Inc.
UL 62841-2-10
First Edition

Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-10: Particular Requirements For Hand-Held Mixers

October 27, 2017

(Title Page Reprinted: September 23, 2022)

This national standard is based on publication IEC 62841-2-10 First Edition (2017).



ANSI/UL 62841-2-10-2017 (R2022)



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 any time. 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 ANSI/UL Standard for Safety consists of the First Edition including revisions through September 23, 2022. The most recent designation of ANSI/UL 62841-2-10 as a Reaffirmed American National Standard (ANS) occurred on September 23, 2022. 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.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <https://csds.ul.com>.

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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 2-10: Particular Requirements for Hand-Held Mixers. It is the First edition of CAN/CSA-C22.2 No. 62841-2-10 and the First edition of UL 62841-2-10.

This harmonized standard is based on IEC Publication 62841-2-10: First edition Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-10: Particular Requirements for Hand-Held Mixers issued February 2017. IEC 62841-2-10 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 the 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.

This CAN/CSA-C22.2 No. 62841-2-10, Standard For Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-10: Particular Requirements for Hand-Held Mixers is to be used in conjunction with the First edition of CAN/CSA-C22.2 No. 62841-1. The requirements for hand-held mixers 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. 62841-2-10, the CAN/CSA-C22.2 No. 62841-1 subclause applies.

This UL 62841-2-10 Standard For Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-10: Particular Requirements for Hand-Held Mixers, is to be used in conjunction with the First edition of UL 62841-1. The requirements for hand-held mixers 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 62841-2-10, 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 IEC 62841-2-10 Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-10: Particular Requirements for Hand-Held Mixers, 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.

These materials are subject to copyright claims of IEC and UL. No part of this publication may be reproduced in any form, including an electronic retrieval system, without the prior written permission of UL. All requests pertaining to the Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-10: Particular Requirements for Hand-Held Mixers, UL 62841-2-10 Standard should be submitted to UL.

NATIONAL DIFFERENCES

National Differences from the text of International Electrotechnical Commission (IEC) Publication IEC 62841-2-10, Electric Motor-Operated Hand-Held Tools, Transportable Tools And Lawn And Garden Machinery – Safety – Part 2-10: Particular Requirements for Mixers, 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.

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FOREWORD

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY – PART 2-10: PARTICULAR REQUIREMENTS FOR HAND-HELD MIXERS

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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6) All users should ensure that they have the latest edition of this publication.

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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 62841-2-10 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
116/303/FDIS	116/313/RVD

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

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

This Part 2-10 is to be used in conjunction with the first edition of IEC 62841-1:2014.

This Part 2-10 supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC Standard: Particular requirements for hand-held mixers.

Where a particular subclause of Part 1 is not mentioned in this Part 2-10, 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 publication 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.

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 2-10: PARTICULAR REQUIREMENTS FOR HAND- HELD MIXERS

1 Scope

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

Addition:

This part of IEC 62841 applies to **mixers**. **Mixers** are not considered to be tools with a **liquid system**.

This standard does not apply to drills and impact drills, even if they can be used as a **mixer**.

NOTE 101 Drills and impact drills are covered by IEC 62841-2-1.

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:

3.101 **mixer**: tool equipped with either one or more output spindles to mount **mixer baskets** specifically designed to stir liquids or to mix building materials such as concrete, plaster, etc., see [Figure 101](#)

Note 1 to entry: The output spindle(s) is/are either threaded, or has/have other coupling means such as a chuck or a hexagonal connector.

Note 2 to entry: Mixers are also commonly known as stirrers.

3.102 **mixer basket**: **accessory** intended to be used with a **mixer** employing a structure of wings, spirals or helixes for moving the material in the container

Note 1 to entry: Mixer baskets are also commonly known as stirrer rods, stirrer baskets, paddles or mixer rods.

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 the chuck and the auxiliary handle, 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:

8.3 Addition:

Mixers with a threaded output spindle shall be marked with the spindle thread size.

Mixers with a hexagonal coupling shall be marked with the width across flats.

For **mixers** with a chuck, the chuck shall be marked with the maximum capacity in mm.

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 Mixer safety instructions

NOTE In the below instructions, on discretion of the manufacturer, the term "mixer/mixed/mixing" is replaced by "stirrer/stirred/stirring" and the term "basket" is replaced by another appropriate term such as "rod".

- a) **Hold the tool with both hands at the intended handles.** *Loss of control can cause personal injury.*
- b) **Ensure sufficient ventilation when mixing flammable materials to avoid a hazardous atmosphere.** *Developing vapour may be inhaled or be ignited by the sparks the power tool produces.*
- c) **Do not mix food.** *Power tools and their accessories are not designed for processing food.*
- d) **Keep the cord away from the working area.** *The cord may be entangled by the mixer basket.*
- e) **Ensure that the mixing container is placed in a firm and secure position.** *A container that is not properly secured may move unexpectedly.*
- f) **Ensure that no liquid splashes against the housing of the power tool.** *Liquid that has penetrated the power tool can cause damage and lead to electric shock.*

g) **Follow the instructions and warnings for the material to be mixed.** *Material to be mixed may be harmful.*

h) **If the power tool falls into the material to be mixed, unplug the tool immediately and have the power tool checked by a qualified repair person.** *Reaching into the bucket with the tool still plugged in can lead to electric shock.*

i) **Do not reach into the mixing container with your hands or insert any other objects into it while mixing.** *Contact with the mixer basket may lead to serious personal injury.*

j) **Start up and run down the tool in the mixing container only.** *The mixer basket may bend or spin in an uncontrolled manner.*

8.14.2 a) *Addition:*

101) Information about which **mixer baskets** can be used with the tool, including their maximum diameter or width, and which extensions can be used.

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:

12.2.1 *Addition:*

The tool is operated continuously for a period of 30 min. The temperature rises are measured at the end of the 30 min.

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:

Table 4
Required performance levels

Type and purpose of SCF	Minimum Performance Level (PL)
Power switch – prevent unwanted switch-on	b
Power switch – provide desired switch-off	a
Any electronic control to pass the test of 18.3	a
Any speed limiting device	Not an SCF
Provide desired direction of rotation	Not an SCF
Prevent exceeding thermal limits as in Clause 18	a
Prevent self-resetting as required in 23.3	b
Prevent unwanted lock-on of the power switch function	a
NOTE In Europe (EN 62841-2-10), 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 other dangerous parts of the tool other than the output spindle and the **mixer basket** shall be so positioned or enclosed to provide adequate protection against personal injury.

19.4 Replacement:

Mixers shall be provided with at least two handles.

Compliance is checked by inspection.

19.4.101 The design of the handle(s) shall be such that the operator can control the torque during the operation of the tool.

Compliance is checked by measurement and by calculations as follows:

The moment arm of each handle (a) is determined as illustrated in [Figure 102](#). The sum of the moment arms of the two handles shall be greater than or equal to the diameter or width of the largest recommended **mixer basket** in accordance with [8.14.2 a\) 101](#)). If there are more than two handles, then the worst case configuration in accordance with [8.14.2 b\) 6](#)) shall be used, with one of the handles incorporating the **power switch**.

19.6 This subclause is not applicable.

19.101 For **mixers** with more than one spindle, the spindles shall be adequately spaced in order to reduce the risk of entanglement. The minimal clearance c between rotating parts in the area of the spindle outputs and along further 100 mm down to the **mixer basket** shall be at least 40 mm, see [Figure 103](#).

Compliance is checked by measurement.

19.102 Chuck keys shall be so designed that they drop easily out of position when released. This requirement does not exclude the provision of clips for holding the key in place when not in use; metal clips fixed to the flexible cable or cord are not allowed.

Compliance is checked by inspection and by manual test.

The key is inserted in the chuck and, without tightening, the tool is turned such that the key is facing down. The key shall fall out.

20 Mechanical strength

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

20.3.1 Replacement:

Mixers are subjected to three impacts that result from the tool being tipped over to strike a concrete surface. The tool is tipped with the longest **mixer basket**, including extensions, if applicable, recommended by the manufacturer in accordance with [8.14.2 a\) 101](#)). If no length of the recommended **mixer basket** is specified, the tip test is performed with a **mixer basket** of 1 m length. The tool is positioned in an upright position with the tip of the **mixer basket** resting on the concrete surface. The tool is then tipped in three different directions on to the concrete surface.

NOTE Typical mixer baskets have a length of 600 mm. Available extensions have a length up to 400 mm.

If **attachments** are provided as specified in accordance with [8.14.2](#), the test is repeated with each **attachment** or combination of **attachments** mounted to a separate tool sample.

20.5 This subclause is not applicable.

21 Construction

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

21.18.1.1 Addition:

A **power switch** lock-on device, if any, shall be located such that it can be activated without releasing any hand from the grasping area of the handles required in [19.4](#). In addition, it shall be so designed that it is not likely to be unintentionally locked on by the user's hand.

Compliance is checked by inspection or, for a **power switch** with a lock-on device within the grasping area, by the following test.

With the **power switch** in the “on” position, the lock-on device shall not be actuated by a straight edge 25 mm long when the straight edge is pushed down on the lock-on device. The straight edge shall be oriented in any direction and be applied to bridge the surface of the lock-on device and any surface adjacent to the lock-on device.

NOTE In Europe (EN 62841-2-10), the following additional requirement applies:

For mixers, 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:*

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

21.30 This subclause is not applicable.

21.35 This subclause is not applicable.

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

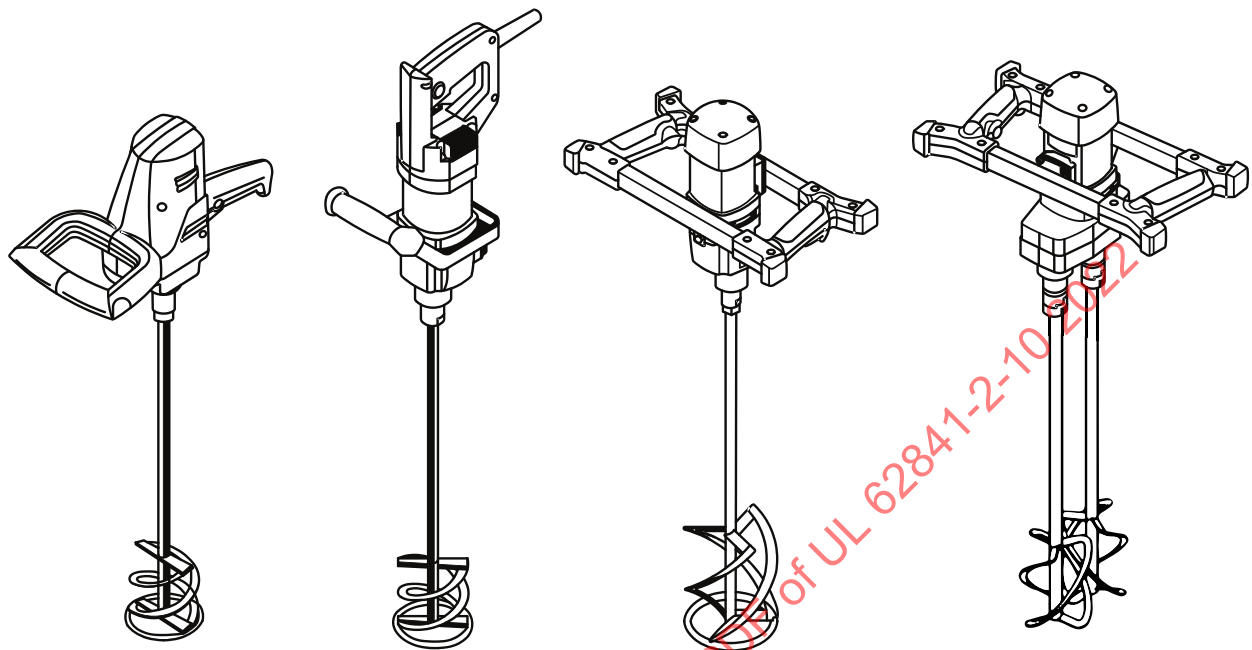
This clause of Part 1 is applicable.

28 Creepage distances, clearances and distances through insulation

This clause of Part 1 is applicable.

Figure 101

Mixers with various handle and spindle configurations

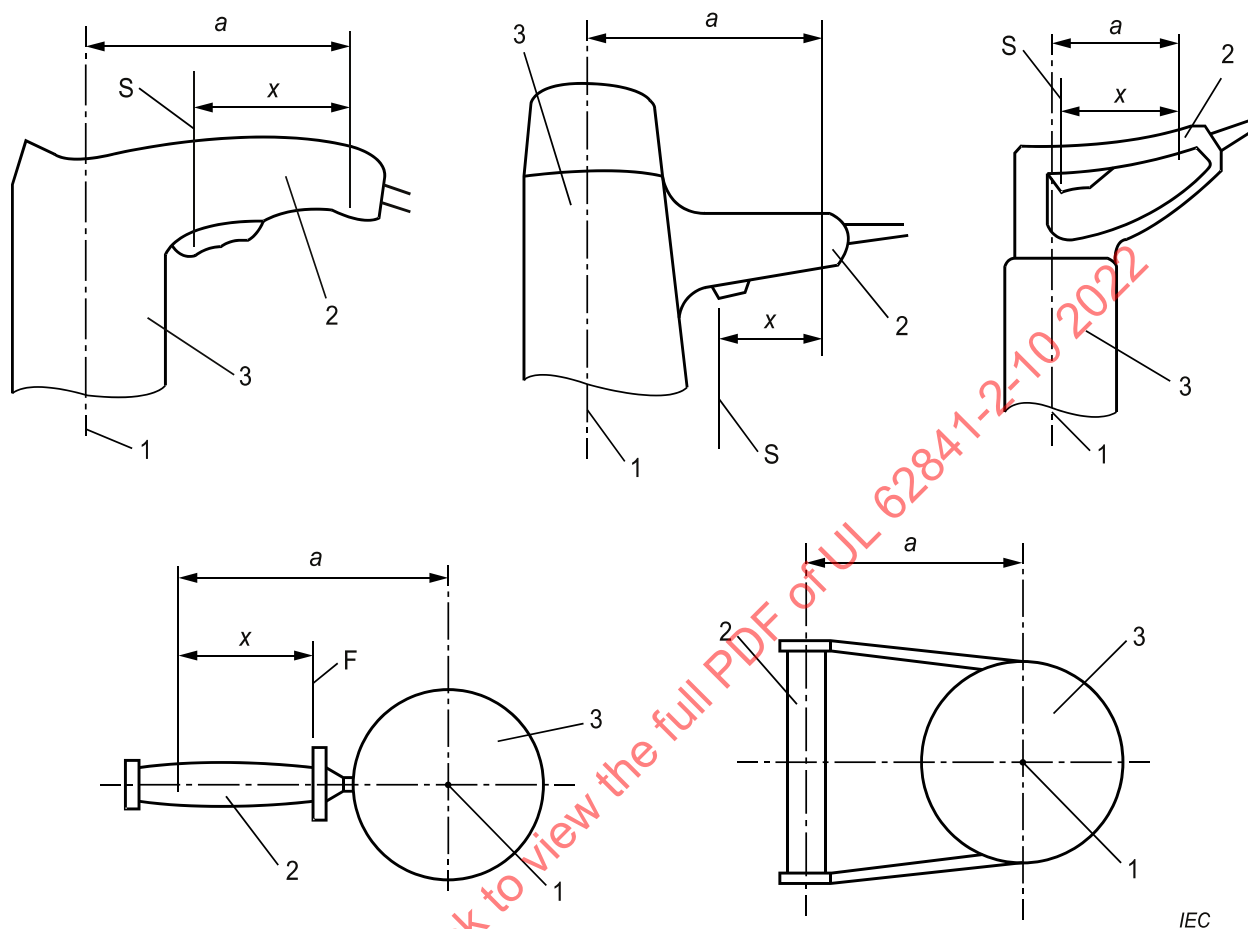


IEC

su2744

Figure 102

Moment arm for various handle designs



su2745

Key

1 axis of the output spindle

2 handle

3 motor housing

S location of the hand on the **power switch** where the operator naturally grasps

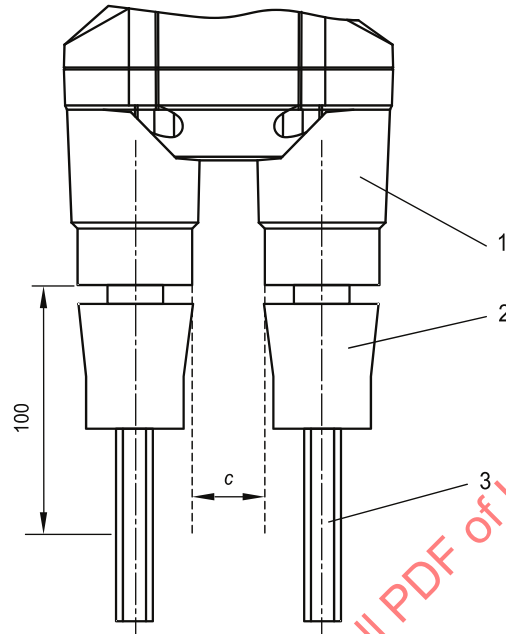
x measurement point that is 80 mm or the remaining length of the handle, whichever is less, from S in the direction of where the hand grasps the tool

a moment arm

IEC

Figure 103
Clearance between spindles

Dimension in millimetres



IEC

su2749

Key

c clearance

1 **mixer** housing/gear box

2 coupling means

3 mounting end of **mixer basket**

NOTE The shape of the coupling devices as illustrated is only an example and not a mandatory design.

Annexes

The annexes of Part 1 are applicable except as follows.

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