

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety –
Part 3-6: Particular requirements for transportable diamond drills with liquid system**

IEC 62841-3-6:2014

**Outils électroportatifs à moteur, outils portables et machines pour jardins et pelouses – Sécurité –
Partie 3-6: Exigences particulières pour les forets diamantés transportables avec système liquide**

62841-3-6-2014





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**Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety –
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 3-6: Particular requirements for transportable diamond drills with liquid system

FOREWORD

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IEC 62841-3-6 edition 1.1 contains the first edition (2014-05) [documents 116/165/FDIS and 116/179/RVD], its corrigendum (2015-05) and its amendment 1 (2022-05) [documents 116/575/FDIS and 116/583/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.

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

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

This Part 3-6 is to be used in conjunction with IEC 62841-1:2014.

This Part 3-6 supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC Standard: *Particular requirements for transportable diamond drills with liquid system*.

Where a particular subclause of Part 1 is not mentioned in this Part 3-6, that subclause applies as far as is reasonable. 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 the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under [webstore.iec.ch](https://standards.iteh.ai/catalog/standards/sist/3ee1c10c-369a-4c00-b73e-b6a54c3006e5/iec-62841-3-6-2014) in the data related to the specific publication. At this date, the publication will be

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- withdrawn,
- replaced by a revised edition, or
- amended.

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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.

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

Part 3-6: Particular requirements for transportable diamond drills with liquid system

1 Scope

This clause of Part 1 is applicable except as follows:

Replacement of the third paragraph:

The **rated voltage** is not more than 250 V for single-phase AC or DC tools, and 480 V for three-phase AC tools.

Addition:

This ~~part of IEC 62841~~ document applies to transportable **diamond drills**, intended to be connected to a **liquid system**. **Liquid system** ~~may~~ can include liquid from a pipe or container.

2 Normative references

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

Replacement:

IEC 61540:1997¹, *Electrical accessories – Portable residual current devices without integral overcurrent protection for household and similar use (PRCDs)*
IEC 61540:1997/AMD1:1998

Addition:

IEC 61008-1:2010², *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – Part 1: General rules*
IEC 61008-1:2010/AMD1:2012
IEC 61008-1:2010/AMD2:2013

IEC 62841-1:2014, *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements*

3 Terms and definitions

This clause of Part 1 is applicable except as follows:

¹ There exists a consolidated edition 1.1:1999 which includes IEC 61540:1997 and its Amendment 1:1998.

² There exists a consolidated edition 3.2:2013 which includes IEC 61008-1:2010 and its Amendment 1:2012 and Amendment 2:2013.

Addition:

**3.101
diamond drill**

manually fed tool with liquid system designed to drill stone and concrete by means of diamond core bits. The tool at least consists of a **drill unit** and a **drill stand** to which it is fixed. The **drill stand** is either attached to the workpiece to be drilled by means of fasteners, vacuum or other suitable devices (see Figure 101) or the **drill stand** is secured to an appropriate support such as a scaffolding

**3.102
drill unit**

device consisting of a motor and a fitting for the drill bit

**3.103
drill stand**

device for supporting the **drill unit** in its operating position

**3.104
liquid collection device**

device to collect liquid and slurry when drilling

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:

*An auxiliary handle, if provided, and the **drill stand** are regarded as needed for normal use.*

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:**~~

~~**Diamond drills shall be marked with:**~~

~~— rated no-load speed.~~

8.3 Replacement of the sixth dash:

- ">25 kg" on each separable unit with a mass above 25 kg, in accordance with 8.14.2 a) 102).

Replace the existing text of 8.14.2 a), item 102), with the following new text:

- 102) Instruction to and information about how to mount the **drill unit** to the **drill stand**, if separable;

8.14.1.1 Addition:

101) Diamond drill safety warnings

- a) **When performing drilling that requires the use of water, route the water away from the operator's work area or use a liquid collection device. Such precautionary measures keep the operator's work area dry and reduce the risk of electrical shock.**
- b) **Operate power tool by insulated grasping surfaces, when performing an operation where the cutting accessory may contact hidden wiring or its own cord. Cutting accessory contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.**
- c) **Wear hearing protection when diamond drilling. Exposure to noise can cause hearing loss.**
- d) **When the bit is jammed, stop applying downward pressure and turn off the tool. Investigate and take corrective actions to eliminate the cause of the bit jamming.**
- e) **When restarting a diamond drill in the workpiece check that the bit rotates freely before starting. If the bit is jammed, it may not start, may overload the tool, or may cause the diamond drill to release from the workpiece.**
- f) **When securing the drill stand with anchors and fasteners to the workpiece, ensure that the anchoring used is capable of holding and restraining the machine during use. If the workpiece is weak or porous, the anchor may pull out causing the drill stand to release from the workpiece.**
- g) **When securing the drill stand with a vacuum pad to the workpiece, install the pad on a smooth, clean, non-porous surface. Do not secure to laminated surfaces such as tiles and composite coating. If the workpiece is not smooth, flat or well affixed, the pad may pull away from the workpiece.**

NOTE The above warning applies only if the tool is intended to be used with a vacuum pad.

- h) **Ensure there is sufficient vacuum before and during drilling. If the vacuum is insufficient, the pad may release from the workpiece.**

NOTE The above warning applies only if the tool is intended to be used with a vacuum pad

- i) **Never perform drilling with the machine secured by the vacuum pad only, except when drilling downwards. If the vacuum is lost, the pad will release from the workpiece.**

NOTE The above warning applies only if the tool is intended to be used with a vacuum pad.

- j) **When drilling through walls or ceilings, ensure to protect persons and the work area on the other side. The bit may extend through the hole or the core may fall out on the other side.**

- k) **Do not use this tool for overhead drilling with water supply. Water entering the power tool will increase the risk of electric shock.**

NOTE The above warning is only needed for tools that cannot be used for drilling overhead.

- l) **When drilling overhead, always use the liquid collection device specified in the instructions. Do not allow water to flow into the tool. Water entering the power tool will increase the risk of electric shock.**

NOTE The above warning is only needed for tools that can be used for drilling overhead.

8.14.2 a) Addition:

- 101) Information about which diamond core bits can be used with the machine;
- 102) Instruction to and information about how to mount the tool to the **drill stand**;
- 103) Information about how to install the diamond core bit to the tool and, if applicable, information about diamond core bit assembly;
- 104) Instruction to and information about how to anchor the **drill stand** in all applicable positions;
- 105) For tools using vacuum fixing devices:
 - Instruction to and information about how to check the surface where the **drill stand** shall be fixed;
 - Instruction to additionally secure the **drill stand** when drilling in orientations other than vertically down, by using appropriate accessories or means and information how to achieve this;
 - Information regarding minimum vacuum level necessary for safe operation and how to control it during the drilling operation;
 - Information regarding the maximum core bit diameter suitable for use with vacuum fixing;
- 106) For tools that can be used for drilling overhead with a **liquid collection device**:
 - Information about the minimum and maximum diamond core bit diameter that can be used with the **liquid collection device**.

8.14.3 Replacement:

If information about the mass or weight of the tool is provided, it shall either be the mass specified in 5.17, or it shall be clear which part of the tool the mass refers to.

Compliance is checked by inspection. standards.iteh.ai/standards/sist/3e1c10c-369a-4c00-b73e-b6a54c3006e5/iec-62841-3-6-2014

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 except as follows:

14.3 Replacement:

Liquid systems or spillage of liquid shall not subject the user to an increased risk of electrical shock.

If the tool is rated at least IPX4 in accordance with 14.2, this requirement is deemed to be fulfilled.

Compliance is checked by the following test:

*The **residual current device**, if any, shall be disabled during the test. Electrical components, covers and other parts which can be removed without the aid of a tool are removed, except those fulfilling the test of 21.22.*

The tool is prepared with approximately 1,0 % NaCl solution in the following modes if applicable:

- *as described in 8.14.2;*
- *the liquid container of the tool is completely filled, and a further quantity, equal to 15 % of the capacity of the container, or 0,25 l, whichever is the greater, is poured in steadily over a period of 60_{-10}^{+0} s, while the tool is resting in its filling position in accordance with 8.14.2 d);*
- *a detachable liquid container is filled completely and mounted and dismantled 10 times on the tool.*

*In each applicable preparation, the tool is operated at **rated voltage** in each position consistent with the instructions according to 8.14.2 b) for 1 min while monitoring the leakage current as in Clause C.3.*

*For 3-phase **diamond drills** with a **rated input** exceeding 3 700 W, during the test the leakage current shall not exceed:*

- *5 mA for a, b and c in Figure C.2 in the closed position;*
- *10 mA for the test repeated with each of the switches a, b, c in Figure C.2 open in turn, the other two switches being closed.*

*For all other **diamond drills**, during the test the leakage current shall not exceed:*

- *2 mA for a **class II tool**;*
- *5 mA for a **class I tool**.*

*Following this test, the tool shall meet the electric strength test of Clause D.2 between **live parts** and **accessible parts** after being allowed to dry for 24 h at ambient temperature.*

14.3.101 Diamond drills which are intended to be used for drilling overhead in accordance with 8.14.2 a) 104) and using a **liquid collection device** shall prevent electric shock due to excessive liquid spillage.

Compliance is checked by the following test.

*The **drill unit** runs vertically upwards at **rated voltage** under no-load condition with the **liquid collection device** installed. If the **liquid collection device** is designed to be connected to a liquid vacuum device, then such a device shall be attached. The test is conducted twice, the*

drill being fitted once with the minimum and once with the maximum diameter of the diamond core bit as specified for the **liquid collection device** in accordance with 8.14.2 a) 106).

The test arrangement is shown in Figure 102.

The liquid flow of approximately 1,0 % NaCl solution shall be in the range of 1 l/min to 1,5 l/min. The running time shall be 15 min. The measuring time starts when the core bit is filled with liquid.

During the test, the leakage current as in Clause C.3 is monitored.

For 3-phase **diamond drills** with a **rated input** exceeding 3 700 W, during the test the leakage current shall not exceed:

- 5 mA for a, b and c in Figure C.2 in the closed position;
- 10 mA for the test repeated with each of the switches a, b, c in Figure C.2 open in turn, the other two switches being closed.

For all other **diamond drills**, during the test the leakage current shall not exceed:

- 2 mA for a **class II tool**;
- 5 mA for a **class I tool**.

Following this test, the tool shall meet the electric strength test of Clause D.2 between **live parts** and **accessible parts** after being allowed to dry for 24 h at ambient temperature.

14.4 Replacement:

Liquid systems shall not subject the user to an increased risk of electrical shock by components not capable of withstanding the pressure during operation.

Compliance is checked by the following test.

The **residual current device**, if any, shall be disabled during the test.

The **liquid system** is closed and an approximately 1,0 % NaCl solution at a hydrostatic pressure equal to twice the pressure stated in 8.14.2 d) 1) is applied for 1 h.

The tool is then placed for 1 min in all positions consistent with the instructions in accordance with 8.14.2 b) while monitoring the leakage current as in Clause C.2.

For 3-phase **diamond drills** with a **rated input** exceeding 3 700 W, during the test the leakage current shall not exceed:

- 5 mA for a, b and c in Figure C.2 in the closed position;
- 10 mA for the test repeated with each of the switches a, b, c in Figure C.2 open in turn, the other two switches being closed.

For all other **diamond drills**, during the test the leakage current shall not exceed:

- 2 mA for a **class II tool**;
- 5 mA for a **class I tool**.

Following this test, the tool shall meet the electric strength test of Clause D.2 between **live parts** and **accessible parts** after being allowed to dry for 24 h at ambient temperature.

14.5 Replacement: