



**SLOVENSKI STANDARD**  
**SIST EN 62841-2-1:2018/A1:2022**

**01-november-2022**

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**Elektromotorna ročna orodja, prenosna orodja ter stroji za trato in vrt - Varnost - 2-1. del: Posebne zahteve za ročne vrtalnike in udarne (vibracijske) vrtalnike - Dopolnilo A1**

Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 2-1: Particular requirements for hand-held drills and impact drills

**ITeH STANDARD PREVIEW**  
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**Ta slovenski standard je istoveten z: EN 62841-2-1:2018/A1:2022**

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**ICS:**

25.080.40	Vrtalniki	Drilling machines
25.140.20	Električna orodja	Electric tools

**SIST EN 62841-2-1:2018/A1:2022**      **en,fr,de**



EUROPEAN STANDARD

**EN 62841-2-1:2018/A1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2022

ICS 25.140.20

English Version

**Electric motor-operated hand-held tools, transportable tools and  
lawn and garden machinery - Safety - Part 2-1: Particular  
requirements for hand-held drills and impact drills  
(IEC 62841-2-1:2017/AMD1:2021)**

Outils électroportatifs à moteur, outils portables et machines  
pour jardins et pelouses - Sécurité - Partie 2-1: Exigences  
particulières pour les perceuses portatives et les perceuses  
à percussion  
(IEC 62841-2-1:2017/AMD1:2021)

Elektrische Motorbetriebene handgeführte Werkzeuge,  
transportable Werkzeuge und Rasen- und  
Gartenmaschinen - Sicherheit - Teil 2-1: Besondere  
Anforderungen für handgeführte Bohrmaschinen und  
Schlagbohrmaschinen  
(IEC 62841-2-1:2017/AMD1:2021)

This amendment A1 modifies the European Standard EN 62841-2-1:2018; it was approved by CENELEC on 2021-12-09. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

**EN 62841-2-1:2018/A1:2022 (E)****European foreword**

The text of document 116/519/FDIS, future IEC 62841-2-1/AMD1, prepared by IEC/TC 116 "Safety of motor-operated electric tools" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62841-2-1:2018/A1:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2023-06-27
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-06-27

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

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), see informative Annex ZZ, which is an integral part of EN 62841-2-1:2018/A12:2022.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

**Endorsement notice**

<https://standards.iteh.ai/catalog/standards/sist/f24fdbcc-7f7a-4f5f-98b7-47d43c35fcbe/sist-en-62841-2-1-2018-a1-2022>

The text of the International Standard IEC 62841-2-1:2017/AMD1:2021 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 62841-2-2      NOTE Harmonized as EN 62841-2-2

IEC 62841-2-6      NOTE Harmonized as EN IEC 62841-2-6



# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

AMENDMENT 1  
AMENDEMENT 1

**Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery –  
Part 2-1: Particular requirements for hand-held drills and impact drills**

**Outils électroportatifs à moteur, outils portables et machines pour jardins et pelouses –  
Partie 2-1: Exigences particulières pour les perceuses portatives et les perceuses à percussion**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE  
TOOLS AND LAWN AND GARDEN MACHINERY –****Part 2-1: Particular requirements for hand-held drills and impact drills****AMENDMENT 1****FOREWORD**

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Amendment 1 to IEC 62841-2-1:2017 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools.

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

Draft	Report on voting
116/519/FDIS	116/525/RVD

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

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications/](http://www.iec.ch/standardsdev/publications/).

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](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.

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## 1 Scope

*Replace the existing text with the following new text:*

This clause of Part 1 is applicable except as follows:

*Addition:*

This part of IEC 62841 applies to hand-held **drills** and **impact drills**, including **diamond core drills**. This document also applies to **drills** that can be used for driving screws by attaching screwdriver bits.

This document does not apply to rotary hammers, screwdrivers, impact wrenches and ratchet drivers even if they can be used as a **drill**.

NOTE 101 Rotary hammers are covered by IEC 62841-2-6.

NOTE 102 Screwdrivers, impact wrenches and ratchet drivers are covered by IEC 62841-2-2.

## 8 Marking and instructions

*Delete existing Subclause 8.3.*

## 18 Abnormal operation

*Replace the existing text of 18.8 with the following new text:*

**18.8 Replacement of Table 4:****Table 4 – Required performance levels**

Type and purpose of SCF	Minimum performance level (PL)
<b>Power switch</b> – prevent unwanted switch-on for tools with $M_R \leq 25$ Nm measured in accordance with 19.102	a
<b>Power switch</b> – prevent unwanted switch-on for tools with $M_R > 25$ Nm measured in accordance with 19.102	b
<b>Power switch</b> – provide desired switch-off for tools with $M_R \leq 25$ Nm measured in accordance with 19.102	b
<b>Power switch</b> – provide desired switch-off for tools with $M_R > 25$ Nm measured in accordance with 19.102	c
<b>Power switch</b> – provide desired switch-off for tools that require bracing in accordance with 8.14.1.101.	Shall be evaluated using the fault conditions of 18.6.1 without the loss of this <b>SCF</b>
Provide desired direction of rotation for tools that do not require bracing in accordance with 8.14.1.101	Not an <b>SCF</b>
Provide desired direction of rotation for tools that require bracing in accordance with 8.14.1.101	c
Any electronic control to pass the test of 18.3	a
For tools with a <b>rated no-load speed</b> of less than $3\,500\text{ min}^{-1}$ , prevent output speed from exceeding 150 % of <b>rated no-load speed</b> as measured in 19.6	a
For tools with a <b>rated no-load speed</b> of $3\,500\text{ min}^{-1}$ or greater, prevent output speed from exceeding 130 % of <b>rated no-load speed</b> as measured in 19.6	a
Prevent exceeding thermal limits as in 18.4	a
Prevent self-resetting as required in 23.3 for tools with $M_R \leq 25$ Nm measured in accordance with 19.102	a
Prevent self-resetting as required in 23.3 for tools with $M_R > 25$ Nm measured in accordance with 19.102	b
Limit the torque to comply with 19.102	c
Prevent unwanted lock-on of the <b>power switch</b> function for tools with $M_R \leq 25$ Nm measured in accordance with 19.102	b
Prevent unwanted lock-on of the <b>power switch</b> function for tools with $M_R > 25$ Nm measured in accordance with 19.102	c

**19 Mechanical hazards**

Add the following new subclause:

**19.6 Replacement:**

The no-load speed of the spindle at **rated voltage** shall not exceed 120 % of the **rated no-load speed**.

*Compliance is checked by measuring the speed of the spindle after the tool has been operating for 5 min at no-load. During the test, separable accessories are not mounted.*



### 19.102.1 General

*Replace the existing text of the last paragraph with the following new text:*

*Compliance is checked by the tests specified in 19.102.2 to 19.102.4 and by the calculations in Figures 104 to 107.*

### 19.102.2 Test equipment

*Replace the existing text of the first paragraph, item a) and item b) with the following new text:*

The test equipment used for the test of 19.102.4 shall meet the following requirements a) to g):

- a) The torque transducer and the rotational angle sensor shall continuously monitor the torque and the rotation produced by the output spindle of the tool during the test of 19.102.4.
- b) The output of the torque transducer shall be connected to an oscilloscope or other data acquisition equipment capable of displaying the torque vs. time graph of the tool's output during the test of 19.102.4.

### 19.102.3 Test procedure

*Insert the following new Subclause 19.2.103 before "19.102.3 Test procedure".*

#### 19.102.3 Assessment to determine tool configuration

*This assessment is only applicable for tools that employ an **electronic circuit(s)** that affects the output torque in the test of 19.102.4.*

*Prior to each measurement, the sample is operated for at least 5 min at no-load. After each 5 min operation period, the measurement shall be conducted within 20 min.*

*All measurements are made with the tool sample running in the forward position.*

*The sample is connected to the measurement fixture and is fixed during the test.*

*For tools with a soft start function, the test of 19.102.4 through steps 1) and 2) is conducted on the sample with the soft start function enabled and then repeated with the soft start function disabled. If analysis shows that the tool will not operate with the soft start function disabled, then the test with the soft start function disabled is not conducted. For tools employing electronically commutated motors, the configuration that results in the greatest output torque shall be used for the test of 19.102.4. For tools other than those employing electronically commutated motors, the configuration that results in the greatest output torque shall be used for the following test.*

*For tools other than those employing electronically commutated motors, when all functions affecting the test value of the output torque, except for any soft start function, are not evaluated as **SCFs** according to 18.8 (e.g. current limit and stall detection), the tool configuration for the test of 19.102.4 shall be the configuration that results in the greatest output torque for one trial of the test of 19.102.4 through steps 1) and 2) as specified below:*

- all functions affecting the output torque enabled; or
- each function not evaluated as an **SCF** affecting the output torque disabled one at a time.

Renumber and replace 19.102.3 as follows.

#### 19.102.4 Test procedure

If applicable, the sample is configured as specified in 19.102.3.

Prior to the test, the sample is operated for at least 5 min at no-load. After the 5 min operation period, the test shall be conducted within 20 min.

All measurements are made with the tool sample running in the forward position.

The sample is connected to the measurement fixture and is fixed during the test. The measurement is conducted by using seven trial measurements of the same sample, each trial conducted as follows:

- 1) Energize the tool to the full "on" position as quickly as possible and allow the joint to be tightened until it comes to a complete stop.
- 2) Record the measured output torque.
  - a) For tools without a mechanical overload clutch, the output torque is determined by either i) or ii):
    - i) For signals that are stable for a minimum of 2 ms after the initial peak (if present), the output torque value is determined by measuring over the stable region for an interval  $T$  not exceeding 100 ms. If there is variation during this interval, the average value shall be used. See Figure 108.
    - ii) For signals that are not stable for a minimum of 2 ms after the initial peak, the output torque value shall be the RMS value of the signal over the rotation from off until peak torque is achieved. See Figure 109.
  - b) For tools with a mechanical overload clutch:

The output torque is determined by the peak value of the first peak that occurs after starting the trial. Later peaks, even if they appear to have greater values, are not taken into account. See Figure 110.
- 3) Before the next trial, disconnect the spindle from the test fixture and operate the tool under no-load for a minimum of 3 s. Allow the tool to cool for a minimum of 2 min before the next trial.

NOTE 101 Torque signals can exhibit a transient peak with a relatively stable signal following the peak. The stable signal can exhibit relatively slow change due to, for example, heating of the windings. The stable signal can also exhibit periodic signal variation due to torque ripple. Averaging over this stable period provides a meaningful torque value. The transient peak and the stable region are not always present.

- b) For tools with a mechanical overload clutch:

The output torque is determined by the peak value of the first peak that occurs after starting the trial. Later peaks, even if they appear to have greater values, are not taken into account. See Figure 110.

- 3) Before the next trial, disconnect the spindle from the test fixture and operate the tool under no-load for a minimum of 3 s. Allow the tool to cool for a minimum of 2 min before the next trial.

$M_R$  is computed as the average of five of the measurements from each of the seven trials, with the highest and lowest measurement eliminated. The standard deviation of the five measurements shall also be computed and shall be less than 5 %. If it is not, then the fixture shall be adjusted to achieve the required repeatability.

NOTE 102 It is recognized that disabling functions that affect the torque can result in a test where the tool is permanently impaired after the test.

## 21 Construction

Add the following new subclause:

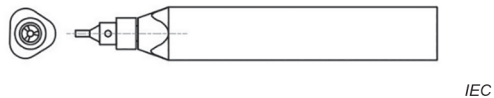
**21.18.1.2** This subclause of Part 1 is not applicable.

**Figures**

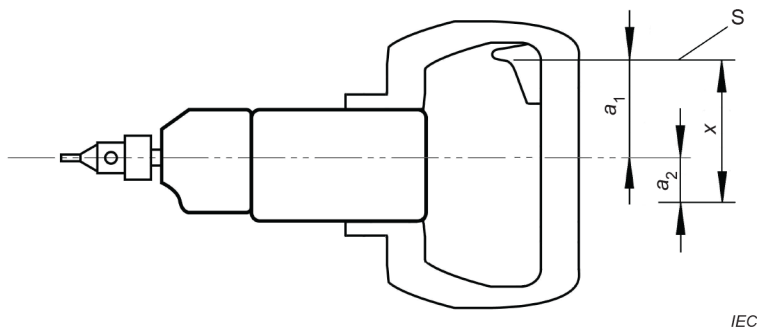
Replace the existing Figure 105 with the following new figure:



$M_{R,max} = 8 \text{ Nm}$   
(For round handle tools)



$M_{R,max} = 10 \text{ Nm}$   
(For non-round handle tools)

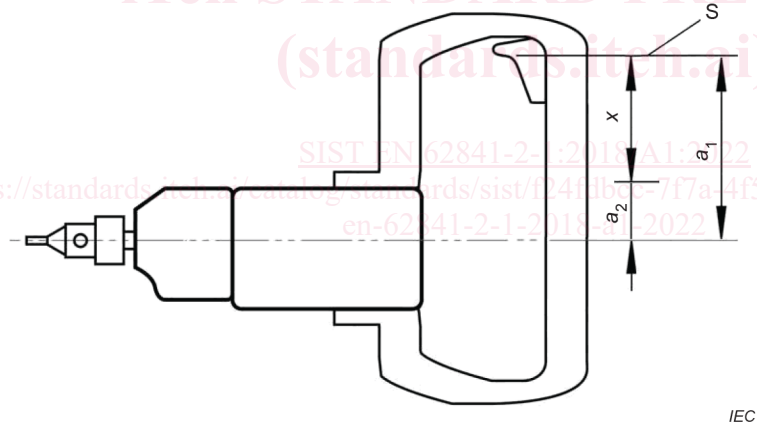


Choose whichever is greater:

$$M_{R,max} = 400 \text{ N} \times a_1$$

or

$$M_{R,max} = 400 \text{ N} \times a_2$$

**Key**

- S location of the hand on the **power switch** where the operator naturally grasps and/or the least favourable position on the **power switch** for the reactionary torque measurement
- 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
- $a_1, a_2$  lever arm distances
- $M_{R,max}$  maximum reaction torque

**Figure 105 – Reaction torque measurement of single handle tools (2)**