

INTERNATIONAL STANDARD

NORME INTERNATIONALE



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

[IEC 62841-2-2:2014](#)

<https://standards.iteh.ai/catalog/standards/sist/5ca700ab-e94a-47eb-95f9-222222222222/iec-62841-2-2-2014>

**Outils électroportatifs à moteur, outils portables et machines pour jardins et pelouses – Sécurité –
Partie 2-2: Règles particulières pour les visseuses et les clés à chocs portatives**



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Part 2-2: Particular requirements for hand-held screwdrivers and impact wrenches**

[IEC 62841-2-2:2014](https://standards.iteh.ai/catalog/standards/sist/5ca700ab-e94a-47eb-95f9-1e71b28011e6/iec-62841-2-2-2014)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

**Part 2-2: Particular requirements for hand-held
screwdrivers and impact wrenches**

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International Standard IEC 62841-2-2 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
116/162/FDIS	116/177/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 2-2 is to be used in conjunction with the first edition of IEC 62841-1:2014.

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

Where a particular subclause of Part 1 is not mentioned in this Part 2-2, that subclause applies as far as 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.

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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

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- 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

The contents of the corrigendum of October 2015 have been included in this copy.

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

Part 2-2: Particular requirements for hand-held screwdrivers and impact wrenches

1 Scope

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

Addition:

This part of IEC 62841 applies to **screwdrivers** and **impact wrenches**.

This standard does not apply to drills that can be used for driving screws by attaching **screwdriver** bits.

2 Normative references

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

Addition:

[IEC 62841-2-2:2014](https://standards.iteh.ai/catalog/standards/sist/5ca700ab-e94a-47eb-95f9-222222222222/iec-62841-2-2-2014)

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ISO 28927-2:2009, *Hand-held portable power tools – Test methods for evaluation of vibration emission – Part 2: Wrenches, nutrunners and screwdrivers*

3 Terms and definitions

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

Additional definitions:

3.101

screwdriver

tool equipped with a non-circular tool holder, such as hexagonal or square, intended for tightening and loosening screws, nuts, and the like and not equipped with an impact mechanism but which may have a device for depth setting or setting the torque or means for switching off the rotation

3.102

impact wrench

tool equipped with a non-circular tool holder, such as hexagonal or square, intended for tightening and loosening screws, nuts, and the like and equipped with a rotary impact mechanism

Note 1 to entry: Some **impact wrenches** are equipped with a means for depth setting and may have a means for setting the torque or switching off the rotation.

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 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:

8.14.1.1 Addition:

[IEC 62841-2-2:2014](https://standards.iteh.ai/catalog/standards/sist/5ca700ab-e94a-47eb-95f9-818181818181/iec-62841-2-2-2014)

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101) Hold the power tool by insulated gripping surfaces, when performing an operation where the fastener may contact hidden wiring or its own cord. Fasteners contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.

NOTE The above safety warning applies only to **screwdrivers** and to **impact wrenches** with a square drive less than 13 mm.

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 Replacement:

The tool is operated intermittently for 30 cycles or until thermal equilibrium is reached, whichever is achieved first, each cycle comprising a period of continuous operation of 30 s and a rest period of 90 s with the tool switched off, the tool loaded during the periods of operation by means of a brake adjusted so as to attain rated input or rated current.

The impact mechanism may be disabled during the test to prevent damage to the brake.

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 <https://standards.iteh.ai/catalog/standards/sist/5ca700ab-e94a-47eb-95f9-29a71b280cb7/iec-62841-2-2-2014>

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

17.2 Modification:

For **screwdrivers**, the test of Part 1 is applicable.

For **impact wrenches**, replace the test of Part 1 as follows:

*An **impact wrench** is operated with no-load for 12 h at a voltage equal to 1,1 times the highest rated voltage or 1,1 times the upper limit of the rated voltage range and then for 12 h at a supply voltage equal to 0,9 times the lowest rated voltage or 0,9 times the lower limit of the rated voltage range. The 12 h of operation need not be continuous. If applicable, the tool is adjusted to the maximum attainable speed.*

The tool may be switched on and off by means of a switch other than that incorporated in the tool.

Each cycle of operation comprises an “on” period of 100 s and an “off” period of 20 s, the “off” periods being included in the specified operating time.

During the test, the tool is placed in three different positions, the operating time, at each voltage, being approximately 4 h for each position.

NOTE The change of position is made to prevent abnormal accumulation of carbon dust in any particular place. Examples of the three positions are horizontal, vertically up and vertically down.

After this, the **impact wrenches** are operated intermittently for 12 h at a supply voltage equal to 1,1 times the highest rated voltage or 1,1 times the upper limit of the rated voltage range, then for 12 h at a supply voltage equal to 0,9 times the lowest rated voltage or 0,9 times the lower limit of the rated voltage range.

Each cycle of operation comprises a tool impacting for a period of 1 s and a resting period of 9 s with the tool switched “off”, the “off” periods being included in the specified operating time.

During these tests, replacement of the carbon brushes is allowed, and the tool is oiled and greased as in normal use. If mechanical failure occurs and does not impair compliance with this standard, the part that failed may be replaced.

If the temperature rise of any part of the tool exceeds the temperature rise determined during the test of 12.1, forced cooling or rest periods may be applied, the rest periods being excluded from the specified operating time. If forced cooling is applied, it shall not alter the air flow of the tool or redistribute carbon deposits.

During these tests, overload protection devices incorporated in the tool shall not activate.

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

IEC 62841-2-2:2014

Type and purpose of SCF	Minimum Performance Level (PL)
Power switch – prevent unwanted switch-on	a
Power switch – prevent unwanted switch-on for tools where the bit does not rotate without applying axial pressure	Not an SCF
Power switch – provide desired switch-off	a
Power switch – provide desired switch-off for tools where the bit does not rotate without applying axial pressure	Not an SCF
Provide desired direction of rotation	Not an SCF
Any electronic control to pass the test of 18.3	Not an SCF
Any speed limiting device	Not an SCF
Prevent exceeding thermal limits as in Clause 18	a

19 Mechanical hazards

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

19.6 This subclause is not applicable.

20 Mechanical strength

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

20.5 This subclause is not applicable for **impact wrenches** with a square drive greater than or equal to 13 mm.

21 Construction

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

21.30 This subclause is not applicable for **impact wrenches** with a square drive greater than or equal to 13 mm.

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, except as follows:

24.4 *Replacement of paragraphs 1 and 2:*

For **impact wrenches**, the lightest cable which can be used is heavy polychloroprene sheathed flexible cable (60245 IEC 66) or equivalent.

IEC 62841-2-2:2014
<https://standards.iteh.ai/catalog/standards/sist/5ca700ab-e94a-47eb-95f9-29a71b280cb7/iec-62841-2-2-2014>

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.

Annexes

The annexes of Part 1 are applicable except as follows.

Annex I (informative)

Measurement of noise and vibration emissions

NOTE In Europe (EN 62841-2-2), 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:

Screwdrivers are suspended. The bit holder shall be horizontal.

Impact wrenches are held and used as specified in I.2.5.

I.2.5 Operating conditions

Addition:

<https://standards.iteh.ai/catalog/standards/sist/5ca700ab-e94a-47eb-95f9-29a71b280cb7/iec-62841-2-2-2014>

Screwdrivers are tested at no-load.

Impact wrenches are tested under load. The load is applied by means of a brake system, so that the socket driving the brake rotates at a test speed of $(45 \pm 5) \text{ min}^{-1}$ and the impact mechanism is caused to operate continuously. The brake as shown in Figure I.101 is supported on a resilient material and mounted on a bench such that the geometric centre of the tool is 1 m above the reflecting plane. The details of the brake system are given in Annex C of ISO 28927-2:2009.

To prevent chattering noise from items 2, 3 and 5 of the brake shown in Figures C.1 and C.2 of ISO 28927-2:2009, these parts may be insulated between each other by material such as rubber.

The feed force shall be just sufficient to obtain a stable operation.

The measurement time shall be approximately 10 s.

I.3 Vibration

This clause of Part 1 is applicable except as follows:

I.3.3.2 Location of measurement

Addition:

Figures I.102 and I.103 show the positions for different **screwdrivers** and **impact wrenches**.