

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety –  
Part 3-4: Particular requirements for transportable bench grinders**

**Outils électroportatifs à moteur, outils portables et machines pour jardins et pelouses – Sécurité –**

**Partie 3-4: Exigences particulières pour les tourets à meuler transportables**

<https://standards.iteh.ai/catalog/standards/iec/50510997-5f38-42a5-a773-a379b87aafd9/iec-62841-3-4-2016>



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

## Part 3-4: Particular requirements for transportable bench grinders

### FOREWORD

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**IEC 62841-3-4 edition 1.1 contains the first edition (2016-02) [documents 116/258/FDIS and 116/275/RVD], its corrigendum (2016-12) and its amendment 1 (2019-07) [documents 116/381/CDV and 116/401/RVC].**

**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.**



International Standard IEC 62841-3-4 has been prepared by IEC 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 3-4 is to be used in conjunction with the first edition of IEC 62841-1:2014.

This Part 3-4 supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC Standard: Particular requirements for transportable bench grinders.

Where a particular subclause of Part 1 is not mentioned in this Part 3-4, 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 the base publication and its amendment 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.

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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 3-4: Particular requirements for transportable bench grinders

### 1 Scope

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

*Addition:*

This part of IEC 62841 applies to transportable **bench grinders** that can be equipped with one or two **accessories** as follows:

- type 1 grinding wheels ~~in accordance with ISO 603-4:1999~~ (see Figure 106) with a diameter not exceeding 310 mm and a thickness not exceeding 55 mm;
- wire brushes with a diameter not exceeding 310 mm and a thickness not exceeding 55 mm;
- polishing wheels with a diameter not exceeding 310 mm;

and with a peripheral speed of any **accessory** between 10 m/s and 50 m/s.

NOTE Polishing wheels are also known as buffing wheels.

### 2 Normative references

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

*Addition:*

~~ISO 603-4:1999, Bonded abrasive products — Dimensions — Part 4: Grinding wheels for surface grinding/peripheral grinding~~

### 3 Terms and definitions

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

#### 3.101

##### **bench grinder**

tool designed to grind, clean, polish or debur metal or similar materials by means of one or two rotating **accessories** fixed to one or two **tool spindles**, see Figure 101, where the workpiece is held by hand and possibly assisted by a **work rest**

#### 3.102

##### **tool spindle**

drive spindle of a **bench grinder** which supports the **accessories** and provides the rotation

#### 3.103

##### **work rest**

surface or device intended to support or to guide the workpiece

## 4 General requirements

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

**4.101**  $D$  is understood to be the maximum diameter of the **accessory** to be used on each **tool spindle**. Unless otherwise specified, **tool spindle** specific requirements dependent on  $D$  shall be based on the value of  $D$  for the relevant **tool spindle**.

Throughout the remaining part of this document, unless otherwise explicitly stated, whenever a requirement or a reference is made to “force” as multiple of  $D$ , the force shall be expressed in newtons (N) and  $D$  shall be expressed in millimetres (mm).

## 5 General conditions for the tests

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

### 5.17 Addition:

*The mass of the tool shall include the **guards**, **work rests** and transparent screens. Any additional parts such as leg sets or carrying means that are required in accordance with the instructions for the safe use of the tool shall be included in the mass.*

## 6 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

## 7 Classification

This clause of Part 1 is applicable. [IEC 62841-3-4:2016](https://standards.iteh.ai/catalog/standards/iec/50510997-5f38-42a5-a773-a379b87aafd9/iec-62841-3-4-2016)

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## 8 Marking and instructions

This clause of Part 1 is applicable except as follows:


### 8.1 Addition:

Tools shall be marked with:

- **rated no-load speed** of the **tool spindle(s)**.

### 8.2 Addition:

Tools shall be marked with the following safety warnings:

- “ **WARNING** Always wear eye protection” or the symbol M004 of ISO 7010 or the following safety sign:



- a warning near any polishing spindle (i.e. a spindle without a **guard**) never to use a grinding wheel or wire brush on the polishing side of the tool, if applicable.

### 8.3 Addition:

**Bench grinders** shall be marked with the minimum and maximum diameter of the **accessory** to be used on each **tool spindle**.

**Bench grinders** shall be marked with the direction of rotation of the **tool spindle**, indicated in a visible location on the tool in the vicinity of the **tool spindle**, by an arrow raised or recessed or by any other means no less visible and indelible.

#### 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 Safety instructions for bench grinders

##### Bench grinder safety warnings

- a) **Do not use a damaged accessory. Before each use, inspect the accessory such as abrasive wheels for chips and cracks and wire brushes for loose or cracked wires. After inspecting and installing an accessory, position yourself and bystanders away from the plane of the rotating accessory and run the power tool at maximum no-load speed for one minute. Damaged accessories will normally break apart during this test time.**

NOTE 1 For tools that are not intended for wire brushes, the phrase “and wire brushes for loose or cracked wires” is omitted.

- b) **The rated speed of the accessory must be at least equal to the maximum speed marked on the power tool. Accessories running faster than their rated speed can break and fly apart.**
- c) **Be aware that wire bristles are thrown by the wire brush even during ordinary operation. Do not overstress the wires by applying excessive load to the wire brush. The wire bristles can easily penetrate light clothing and/or skin.**

NOTE 2 The above safety warning applies only to tools intended to be used with wire brushes.

- d) **Never grind on the sides of a grinding wheel. Grinding on the side can cause the wheel to break and fly apart.**

#### 8.14.2 a) Addition:

- 101) Information about details and type of the **accessory(ies)** recommended for each **tool spindle**, e.g. the maximum thickness of the **accessory** and the diameter of the hole in the **accessory**;
- 102) Instruction to use only **accessories** with a diameter according to the relevant marking as required by 8.3;
- 103) Instruction to ensure that the **bench grinder** is always stable and secure (e.g. fixed to a bench) and instruction how to fix the tool to a workbench or the like;
- 104) Instructions on the correct mounting of wheels and ensuring that wheels are free of defects before use, including instructions for performing a ring test for cracks.

#### 8.14.2 b) Addition:

- 101) Instruction to adjust the spark arrestor and the **work rest** frequently so as to compensate for wear of the wheel;
- 102) Instruction to keep the distance between the spark arrestor/**work rest** and the wheel as small as possible and in any case not greater than 2 mm;
- 103) Instruction to replace the worn wheel when these gaps are no longer able to be maintained;

- 104) For tools with two spindles: instruction to always use the tool with **accessories** on both spindles in order to limit the risk of contact with the rotating spindle;
- 105) Instruction to always use the **guard, work rest**, transparent screen and spark arrestor as required for the **accessory(ies)**;
- 106) For tools with a vertically adjustable or inclinable **work rest**: instruction on how to properly adjust and secure the **work rest** angle in relation to the wheel;
- 107) Instructions on how to perform grinding functions safely;
- 108) Instruction to replace damaged or deeply grooved wheels;
- 109) Instruction where to lift and support the **bench grinder** during transportation;
- 110) Instruction to always adjust the **work rest** so that the angle between the **work rest** and the tangent of the **accessory** is always greater than 85°.

**8.14.2 c) Addition:**

- 101) Instructions for handling and storage of grinding wheels and wire brushes, 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.

## **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:

### 18.5 Addition:

For **bench grinders** operated by three phase motors, the tests of 18.5.1 and 18.5.2 may be replaced by the test of 18.5.3.

#### 18.5.3 Addition:

*If the test of 18.5.3 is applied, the tool shall be tested for a period of 5 min.*

## 18.8 Electronic circuits providing safety critical functions

Replacement of Table 4 by the following:

**Table 4 – Required performance levels**

Type and purpose of SCF	Minimum Performance Level (PL)
For tools intended to be used with grinding wheels or wire brushes, <b>power switch</b> – prevent unwanted switch-on	a
For tools intended to be used with grinding wheels or wire brushes, <b>power switch</b> – provide desired switch-off	a
For tools not intended to be used with grinding wheels or wire brushes, <b>power switch</b> – prevent unwanted switch-on	Not an <b>SCF</b>
For tools not intended to be used with grinding wheels or wire brushes, <b>power switch</b> – provide desired switch-off	Not an <b>SCF</b>
Any electronic control to pass the test of 18.3	a
For tools intended to be used with grinding wheels, over-speed prevention to prevent output speed above 120 % of <b>rated no-load speed</b>	c
For tools not intended to be used with grinding wheels, over-speed prevention to prevent output speed above 130 % of <b>rated no-load speed</b>	a
Provide desired direction of rotation	b
Prevent exceeding thermal limits as in Clause 18	a
Prevent self-resetting as required in 23.3	a

## 19 Mechanical hazards

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

### 19.1 Replacement of the first paragraph:

Moving and dangerous parts other than the **accessories** shall be so positioned or enclosed to provide adequate protection against personal injury. The guarding of **accessories** is covered in 19.1.101 through 19.1.103.