

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 2
AMENDEMENT 2

Hand-held motor-operated electric tools – Safety –
Part 2-3: Particular requirements for grinders, polishers and disk-type sanders
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Outils électroportatifs à moteur – Sécurité –
Partie 2-3: Règles particulières pour les meuleuses, lustreuses et ponceuses du
type à disque





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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX



ICS 25.140.20

ISBN 978-2-83220-143-5

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FOREWORD

This amendment has been prepared IEC technical committee 116: Safety of motor-operated electric tools.

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

FDIS	Report on voting
116/89/FDIS	116/95/RVD

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

The committee has decided that the contents of this amendment and the base 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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1 Scope

Add the following new paragraph to the existing text:

This standard does not apply to die grinders utilizing collets or chucks for mounting threaded cones and mandrel mounted wheels which are covered by IEC 60745-2-23.

2 Normative references

Delete the fourth normative reference ANSI B7.1.

Add the following new normative reference:

ANSI B74.2:2003, *Specifications for Shapes and Sizes of Grinding Wheels, and for Shapes, Sizes and Identification of Mounted Wheels*

3 Terms and definitions

Replace the existing definitions 3.104.2, 3.104.3 and 3.105 by the following:

3.104.2

straight grinder

tool with the rotating spindle in-line with the motor shaft, equipped with an abrasive wheel intended for peripheral grinding, but not equipped with a collet or chuck

3.104.3**vertical grinder**

tool with the rotating spindle in-line with the motor shaft, intended for peripheral and lateral grinding

3.105**threaded wheels**

organic or inorganic bonded abrasives of various types provided with a threaded insert for direct mounting to the grinder spindle

Replace the existing definition 3.110 by the following:

3.110**wheel types**

wheels for different applications in accordance with ISO 603-12, ISO 603-14, ISO 603-16 or ANSI B 74.2

8 Marking and instructions**8.12.1.101 Safety instructions for all operations**

Add the following note to item a):

NOTE List only those operations that are recommended.

Replace the existing item f) by the following:

- f) **Threaded mounting of accessories must match the grinder spindle thread. For accessories mounted by flanges, the arbour hole of the accessory must fit the locating diameter of the flange.** *Accessories that do not match the mounting hardware of the power tool will run out of balance, vibrate excessively and may cause loss of control.*

8.12.1.103 Additional safety instructions for grinding and cutting-off operations

Add the following new safety warning b) after item a) and renumber the subsequent safety warnings:

- b) **The grinding surface of centre depressed wheels must be mounted below the plane of the guard lip.** *An improperly mounted wheel that projects through the plane of the guard lip cannot be adequately protected.*

8.12.2 b)

Replace the existing items 101) to 104), 106) and 107) by the following:

- 101) Instruction on the proper use of blotters, when they are provided with the bonded abrasive product
- 102) Information about the specific flanges to be used with all wheel types in accordance with 8.12.2 a) 101). Instruction on the mounting of accessories and the use of the correct flanges. For reversible flanges, instruction on the correct method of fitting the flanges
- 103) For all wheels specified in accordance with 8.12.2 a) 101), instruction on their proper use. For grinding and cut-off wheels, instruction on their use for side grinding and peripheral grinding applications, and for Type 27 and 28 wheels, the recommended angle to the work surface

- 104) For all operations listed in accordance with 8.12.1.101 a), where the use of a guard is required, instruction for the proper type of guard to be used
- 106) Instruction on proper support for the workpiece
- 107) In case of cup-wheels, cones or plugs with a threaded hole intended to be mounted on the machine spindle, critical dimensions and other data shall be given in order to prevent the spindle end from touching the bottom of the mounting hole of the abrasive product

19 Mechanical hazards

19.101

Replace the existing first paragraph, dashed text not included, by the following:

Grinders with a rated capacity exceeding 55 mm shall be provided with at least one wheel guard to protect the user during normal use against:

Replace the existing second paragraph, dashed text not included, by the following:

If the tool is supplied with one or more accessories, the wheel guard(s) supplied shall be appropriate for the supplied accessory(ies). The wheel guard (hereafter referred to as a guard) may be removable either with the aid of a tool or by fulfilling the following requirements:

Replace the existing third paragraph by the following:

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The guard shall also fulfil the following requirements:

- be designed so that, in case of a wheel burst, the guard reduces the risk of injury to the operator, remains attached to the grinder by effective and secure means and complies with the test of 20.101;
- facilitate the change of the abrasive wheel without the need to remove the guard;
- be designed so that the risk of an accidental contact between the operator and the wheel during normal use is minimized e.g. by a possibility of adjustment.

Replace the existing fourth paragraph by the following:

To prevent the installation of an oversized wheel, the clearance between the inside of the guard and the periphery of a new abrasive product in accordance with 8.12.2 a) 101) shall, in at least one location, be 8 mm maximum for tools with a rated capacity not exceeding 130 mm and 10 mm maximum for tools with a rated capacity exceeding 130 mm.

Replace the existing 6th paragraph by the following:

For wheel Types 27, 28 and 29, the guard shall cover the abrasive wheel periphery and the backing flange side for at least 175°. The guard periphery shall have a lip on the outer edge that curls inward for at least 3 mm from the intersect line of the top surface of the thickest wheel and largest wheel diameter, as specified in accordance with 8.12.2 a) 102), with the inner surface of the guard to the inner edge of the lip, measured radially. The face of the thickest recommended wheel shall be at least 2 mm axially from the inner surface of the lip. The ends of the lip protruding the thickest recommended wheel may be chamfered by not more than 45°. See Figure 102.

Delete the 8th paragraph, starting with "The face of the thickest recommended wheel..."

Replace the existing compliance paragraph by the following:

Compliance is checked by inspection and by measurement. The guard coverage angle is measured with the vertex at the centre of the spindle and extended to the guard periphery.

19.102

Replace the existing 2nd and 3rd paragraphs by the following:

Grinders shall be provided with at least backing flange(s) and locking flange(s) for mounting the type of grinding wheels that are intended to be used with the guard supplied with the grinder. The flanges shall meet the requirements of 19.104 and 19.105.

Flanges are not required with the following designs:

- non-reusable plate mount or threaded nut affixed to the wheel by the manufacturer;
- threaded hole or modified cup wheels.

19.103

Replace the existing 2nd paragraph by the following:

The direction of spindle threads or the design of an equivalent securing means shall be such that any clamping device or wheel with threaded hole tends to tighten during working.

Replace the existing 2nd compliance paragraph by the following:

Compliance is checked by measurement. The eccentricity is measured as the difference between the minimum and the maximum reading of the indicator.

Delete the last paragraph.

19.104

Add, after the third paragraph, the following new text:

If the clamping surface of the locking flange is chamfered, the bevel angle, measured from the clamping surface, shall be at least 45° and the non clamping surface outside diameter of the flange may be increased by not more than 4 mm.

19.104.1

Replace the existing 2nd paragraph by the following:

For wheel Type 41, the D_f dimension may exceed the above values for backing and locking flanges. For all other wheel types, the diameter D_f may exceed the above values for backing flanges only.

Add, at the end of 19.104.1, the following new Note:

NOTE In the United States of America, the following conditions apply:

The flange dimensions for wheel Type 1 that are thicker than 5 mm shall be:

$$D_f \geq 0,33 D$$

The flange diameter for wheels Type 1 that are 5 mm and thinner and Types, 6, 11, 27, 28, 29, 41, and 42 (27A) shall be:

$D_f = (20 \pm 1)$ mm for $55 \text{ mm} \leq D < 80 \text{ mm}$

$D_f = (20 \pm 1)$ mm for $80 \text{ mm} \leq D < 105 \text{ mm}$ for wheels with a bore diameter of 10 mm (3/8 in UNC)

$D_f = (29 \pm 1)$ mm for $80 \text{ mm} \leq D < 105 \text{ mm}$ for wheels with a bore diameter of 16 mm (5/8 in UNC)

$D_f = (41 \pm 1)$ mm for $105 \text{ mm} \leq D \leq 230 \text{ mm}$

For wheel Types 1 and 41, the D_f dimension may exceed the above values for backing and locking flanges. For all other wheel types the diameter D_f may exceed the above values for backing flanges only.

19.104.2

Replace the existing text of this subclause, compliance paragraph not included, by the following:

The dimensions C , G and W in Figure 104 shall be:

$C \geq 3$ mm

$W \geq 1$ mm, $G \geq 1$ mm for $D_f < 50$ mm

$W \geq 1,5$ mm, $G \geq 1,5$ mm for $D_f \geq 50$ mm

The cross-section of the recess need not be rectangular.

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20 Mechanical strength

20.101

Replace the existing first paragraph by the following:
<https://standards.iteh.ai/catalog/standards/si/cc30bb03-0463-48ab-88cf-71a7c6af2499/iec-60745-2-3-2006-amd2-2012>

All wheel guards specified in accordance with 8.12.2 b) 104) shall have sufficient mechanical strength to prevent the wheel fragments from being ejected towards the operator in the event of the wheel breakage.

20.101.3

Replace the first sentence of the first paragraph by the following:

For grinders with side handles, a mass of 1 kg shall be mounted at the midpoint of the switch handle and a mass of 0,5 kg shall be mounted at the midpoint of a side handle installed on each side of the grinder (see Figure 107).

Replace the existing 2nd paragraph by the following:

For grinders without side handles, a mass of 1 kg shall be attached at the midpoint of the switch handle. An adaptor with simulated side handles as means of suspension and weight attachment of 0,5 kg at each side shall be provided for the test. The adaptor shall have a mass as small as possible and be located at the midpoint of the front gripping zone for straight grinders (see Figure 109) and less than half the rated capacity distance behind the output spindle for angle and vertical grinders. The suspension point and weight attachment on the left and right side of the tool shall be located at a distance from the centre of the spindle which is equivalent to rated capacity and at 90° to the centre line through the length of the tool.

Replace the first sentence of the 4th paragraph by the following:

The test box, preferably with a hexagonal, octagonal or round shape, approximately 1 m in interior diameter and approximately 1 m deep, shall have an outer shell capable of restraining the disintegrating wheel segments and the interior walls, lined with 25 mm to 35 mm of modelling clay, backed by an additional 25 mm to 35 mm thick layer of cork (see Figures 110a and 110b).

Replace the first sentence of the 5th paragraph by the following:

An angle and vertical grinder with the mounted guard and the notched wheel facing down in the horizontal plane is positioned with the wheel approximately in the centre and 300 mm from the bottom of the box (see Figure 110a).

Replace the first sentence of the 6th paragraph by the following:

For straight grinders, the test box is turned on its side, thus the axis of the box is horizontal.

21 Construction

21.18.1

Replace, in the first sentence, "For angle grinders" by "For angle and vertical grinders".

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24 Supply connection and external flexible cords

24.4

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<https://standards.iteh.ai/catalog/standards/sist/cc30bb03-0463-48ab-88cf-1a7ca12491e2/iec-60745-2-3-2006-amd2-2012>

Replace, in the first sentence, "For angle grinders" by "For angle and vertical grinders".

Bibliography

Add the following new document to the existing list:

IEC 60745-2-23, *Electric Tools – Safety – Part 2-23: Particular requirements for die grinders and small rotary tools*¹

¹ To be published.