

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1 AMENDEMENT 1

**Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety –
Part 2-3: Particular requirements for hand-held grinders, disc-type polishers and disc-type sanders**

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

Partie 2-3: Exigences particulières pour les meuleuses portatives et pour les lustreuses et ponceuses portatives du type à disque





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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE
TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY –****Part 2-3: Particular requirements for hand-held grinders,
disc-type polishers and disc-type sanders****AMENDMENT 1****FOREWORD**

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Amendment 1 to IEC 62841-2-3:2020 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 |
| 116/813/FDIS | 116/832/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. The main document types developed by IEC are described in greater detail at www.iec.ch/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 in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

1 Scope

Replace the existing text of Clause 1 with the following new text:

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

Addition:

This document applies to hand-held **grinders**, **disc-type polishers** and **disc-type sanders**, including angle, straight and vertical tools, intended for use on various materials except magnesium, with a **rated capacity** not exceeding 230 mm. For **grinders**, the **rated no-load speed** does not exceed a peripheral speed of the **accessory** of 80 m/s at **rated capacity**.

This document also applies to **concrete surface grinders** for use on various masonry materials with a **rated capacity** not exceeding 230 mm.

This document does not apply to **grinders** intended to be fitted with an **accessory** other than a bonded abrasive product or a **diamond wheel**.

This document does not apply to **grinders** intended to be fitted with **diamond wheels** with

- peripheral gaps exceeding 10 mm; or
- a positive rake angle.

This document does not apply to dedicated cut-off machines.

NOTE 101 It is planned that a document on cut-off machines will be published.

This document does not apply to orbital polishers and orbital sanders.

NOTE 102 Orbital polishers and orbital sanders are covered by IEC 62841-2-4.

This document does not apply to die grinders.

NOTE 103 It is planned that a document on die grinders will be published.

2 Normative references

Replace the existing text of Clause 2 with the following new text:

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

Addition:

ISO 525:2020, *Bonded abrasive products – Shape types, designation and marking*

3 Terms and definitions

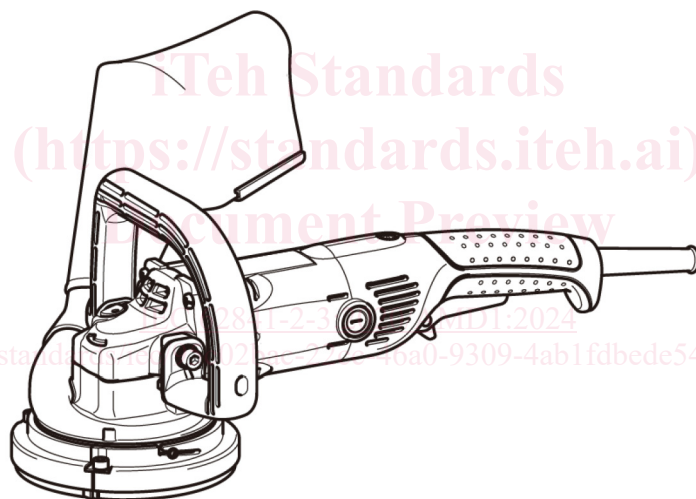
Add the following new entry:

3.106.4

concrete surface grinder

grinder intended for facial grinding with a **diamond grinding wheel** and not intended for other grinding or cut-off operations

Note 101 to entry: See Figure 116.



IEC

Figure 116 – Example of a concrete surface grinder

8 Marking and instructions

Add the following new subclause before 8.6:

8.4 *Modification:*

The marking specified in 8.2.101 may be located on a Type B **wheel guard** that is a **detachable part**.

Replace the existing text of 8.6 with the following new text:

8.6 Addition:

linear dimension..... mm



always operate with two hands



do not use this type of guard for cut-off operations

Add the following new subclause before 8.14.1.101:

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".

In these safety instructions, terms such as grinding or **grinder**, sanding or sander, **concrete surface grinder** or concrete surface grinding, wire brushing or wire brush, polishing or polisher, or cutting-off or cut-off tool are selected as specified by the manufacturer. These terms in the warnings and headings shall be consistently used or deleted based on the selected operations. The "and"/"or" conjunctions may be used as appropriate.

If the power tool is intended only for one of the listed operations, the heading of that section is to be used for all warnings. Grinding and cutting off shall be included for **angle grinders** with a **rated capacity** exceeding 55 mm.

Replace the existing text of 8.14.1.101 with the following new text:

8.14.1.101 Safety warnings for grinders, disc-type polishers and disc-type sanders

1) Safety instructions for all operations

Safety warnings common for grinding, sanding, concrete surface grinding, wire brushing, polishing or cutting-off operations:

NOTE 101 In the above heading, those operations not applicable are omitted.

- a) **This power tool is intended to function as a grinder, sander, wire brush, polisher, hole cutter or cut-off tool. Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.**

NOTE 102 Only the applicable operations are listed in item 1) a) above.

- b) **Operations such as grinding, sanding, wire brushing, polishing, hole cutting or cutting-off are not to be performed with this power tool. Operations for which the power tool was not designed may create a hazard and cause personal injury.**

NOTE 103 Only those operations that were not included in item 1) a) above are listed in item 1) b) above. If all listed operations are intended, then the warning in item 1) b) above is omitted, but all subsequent warnings are given without exclusion.

- c) **Do not convert this power tool to operate in a way which is not specifically designed and specified by the tool manufacturer.** *Such a conversion may result in a loss of control and cause serious personal injury.*
- d) **Do not use accessories which are not specifically designed and specified by the tool manufacturer.** *Just because the accessory can be attached to your power tool, it does not assure safe operation.*
- e) **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.*
- f) **The outside diameter and the thickness of your accessory must be within the capacity rating of your power tool.** *Incorrectly sized accessories cannot be adequately guarded or controlled.*
- g) **The dimensions of the accessory mounting must fit the dimensions of the mounting hardware of the power tool.** *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.*
- h) **Do not use a damaged accessory. Before each use inspect the accessory such as abrasive wheels for chips and cracks, backing pad for cracks, tear or excess wear, wire brush for loose or cracked wires. If power tool or accessory is dropped, inspect for damage or install an undamaged accessory. 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. If unusual vibration is detected, turn the power tool off immediately and replace the cut-off wheel. If unusual vibration is not detected, continue to run the power tool for one minute. Damaged accessories will normally break apart during this test time.**
- i) **Wear personal protective equipment. Use safety glasses, and, depending on the application, a face shield. As appropriate, wear breathing protection, such as a dust mask or respirator, hearing protection, gloves and workshop apron capable of stopping small abrasive or workpiece fragments. The eye protection must be capable of stopping flying debris generated by various applications. The dust mask or respirator must be capable of filtering particles generated by the particular application. Prolonged exposure to high intensity noise may cause hearing loss.**
- j) **Keep bystanders a safe distance away from work area. Anyone entering the work area must wear personal protective equipment. Fragments of workpiece or of a broken accessory may fly away and cause injury beyond immediate area of operation.**
- k) **Hold the power tool by insulated gripping surfaces only, 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.**

NOTE 104 The warning in item 1) k) above is omitted if polishing or sanding are the only intended operations.

- l) **Position the cord clear of the spinning accessory.** *If you lose control, the cord may be cut or snagged and your hand or arm may be pulled into the spinning accessory.*
- m) **Never lay the power tool down until the accessory has come to a complete stop.** *The spinning accessory may grab the surface and pull the power tool out of your control.*
- n) **Do not run the power tool while carrying it at your side.** *Accidental contact with the spinning accessory could snag your clothing, pulling the accessory into your body.*
- o) **Regularly clean the power tool's air vents.** *The motor's fan will draw the dust inside the housing and excessive accumulation of powdered metal may cause electrical hazards.*
- p) **Do not operate the power tool near flammable materials.** *Sparks could ignite these materials.*

- q) **Do not use accessories that require liquid coolants.** *Using water or other liquid coolants may result in electrocution or shock.*

NOTE 105 The warning in item 1) q) above does not apply for power tools specifically designed for use with a **liquid system**.

2) Further safety instructions for all operations

Kickback and related warnings

Kickback is a sudden reaction to a pinched or snagged rotating wheel, backing pad, brush or any other accessory. Pinching or snagging causes rapid stalling of the rotating accessory which in turn causes the uncontrolled power tool to be forced in the direction opposite of the accessory's rotation at the point of the binding.

For example, if an abrasive wheel is snagged or pinched by the workpiece, the edge of the wheel that is entering into the pinch point can dig into the surface of the material causing the wheel to climb out or kick out. The wheel may either jump toward or away from the operator, depending on direction of the wheel's movement at the point of pinching. Abrasive wheels may also break under these conditions.

Kickback is the result of power tool misuse and/or incorrect operating procedures or conditions and can be avoided by taking proper precautions as given below.

- a) **Maintain a firm grip with both hands on the power tool and position your body and arms to allow you to resist kickback forces. Always use auxiliary handle, if provided, for maximum control over kickback or torque reaction during start-up.** *The operator can control torque reactions or kickback forces, if proper precautions are taken.*
- b) **Never place your hand near the rotating accessory.** *Accessory may kickback over your hand.*
- c) **Do not position your body in the area where power tool will move if kickback occurs.** *Kickback will propel the tool in direction opposite to the wheel's movement at the point of snagging.*
- d) **Use special care when working corners, sharp edges, etc. Avoid bouncing and snagging the accessory.** *Corners, sharp edges or bouncing have a tendency to snag the rotating accessory and cause loss of control or kickback.*
- e) **Do not attach a saw chain woodcarving blade, segmented diamond wheel with a peripheral gap greater than 10 mm or toothed saw blade.** *Such blades create frequent kickback and loss of control.*

3) Additional safety instructions for grinding and cutting-off operations

NOTE 106 If grinding and cutting-off operations are not intended by the manufacturer, all of the verbatim text in item 3) below is omitted.

Safety warnings specific for grinding and cutting-off operations

- a) **Use only wheel types that are specified for your power tool and the specific guard designed for the selected wheel.** *Wheels for which the power tool was not designed cannot be adequately guarded and are unsafe.*
- 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.
- c) **The guard must be securely attached to the power tool and positioned for maximum safety, so the least amount of wheel is exposed towards the operator.** *The guard helps to protect the operator from broken wheel fragments, accidental contact with wheel and sparks that could ignite clothing.*

NOTE 107 The warning in item 3) c) above is omitted for **grinders** with a **rated capacity** of less than 55 mm.

- d) **Wheels must be used only for specified applications. For example: do not grind with the side of cut-off wheel.** *Abrasive cut-off wheels are intended for peripheral grinding, side forces applied to these wheels may cause them to shatter.*

- e) **Always use undamaged wheel flanges that are of correct size and shape for your selected wheel.** *Proper wheel flanges support the wheel thus reducing the possibility of wheel breakage. Flanges for cut-off wheels may be different from grinding wheel flanges.*
- f) **Do not use worn down wheels from larger power tools.** *A wheel intended for larger power tool is not suitable for the higher speed of a smaller tool and may burst.*

NOTE 108 The warning in item 3) f) above does not apply for tools only designated to be used with diamond wheels.

- g) **When using dual purpose wheels always use the correct guard for the application being performed.** *Failure to use the correct guard may not provide the desired level of guarding, which could lead to serious injury.*

4) Additional safety instructions for cutting-off operations

NOTE 109 If cutting-off operation is not intended by the manufacturer, all of the verbatim text in item 4) below is omitted.

Additional safety warnings specific for cutting-off operations:

- a) **Do not "jam" the cut-off wheel or apply excessive pressure. Do not attempt to make an excessive depth of cut.** *Overstressing the wheel increases the loading and susceptibility to twisting or binding of the wheel in the cut and the possibility of kickback or wheel breakage.*
- b) **Do not position your body in line with and behind the rotating wheel.** *When the wheel, at the point of operation, is moving away from your body, the possible kickback may propel the spinning wheel and the power tool directly at you.*
- c) **When the wheel is binding or when interrupting a cut for any reason, switch off the power tool and hold it motionless until the wheel comes to a complete stop. Never attempt to remove the cut-off wheel from the cut while the wheel is in motion otherwise kickback may occur.** *Investigate and take corrective action to eliminate the cause of wheel binding.*
- d) **Do not restart the cutting operation in the workpiece. Let the wheel reach full speed and carefully re-enter the cut.** *The wheel may bind, walk up or kickback if the power tool is restarted in the workpiece.*
- e) **Support panels or any oversized workpiece to minimize the risk of wheel pinching and kickback.** *Large workpieces tend to sag under their own weight. Supports must be placed under the workpiece near the line of cut and near the edge of the workpiece on both sides of the wheel.*
- f) **Use extra caution when making a "pocket cut" into existing walls or other blind areas.** *The protruding wheel may cut hidden objects that can cause kickback.*
- g) **Do not attempt to do curved cutting.** *Overstressing the wheel increases the loading and susceptibility to twisting or binding of the wheel in the cut and the possibility of kickback or wheel breakage, which can lead to serious injury.*

5) Additional safety instructions for sanding operations

NOTE 110 If sanding operation is not intended by the manufacturer, all of the verbatim text in item 5) below is omitted.

Safety warnings specific for sanding operations:

- a) **Use proper sized sanding disc paper. Follow the manufacturer's recommendations when selecting sanding paper.** *Larger sanding paper extending too far beyond the sanding pad presents a laceration hazard and may cause snagging, tearing of the disc or kickback.*

6) Additional safety instructions for polishing operations

NOTE 111 If polishing operation is not intended by the manufacturer, all of the verbatim text in item 6) below is omitted.

Safety warnings specific for polishing operations:

- a) **Do not allow any loose portion of the polishing bonnet or its attachment strings to spin freely. Tuck away or trim any loose attachment strings. Loose and spinning attachment strings can entangle your fingers or snag on the workpiece.**

7) Additional safety instructions for wire brushing operations

NOTE 112 If wire brushing operation is not intended by the manufacturer, all of the verbatim text in item 7) below is omitted.

Safety warnings specific for wire brushing operations:

- a) **Be aware that wire bristles are thrown by the brush even during ordinary operation. Do not overstress the wires by applying excessive load to the brush. The wire bristles can easily penetrate light clothing and/or skin.**
- b) **If the use of a guard is specified for wire brushing, do not allow any interference of the wire wheel or brush with the guard. Wire wheel or brush may expand in diameter due to work load and centrifugal forces.**

Delete existing subclauses 8.14.1.101.1 to 8.14.1.101.8.

Replace the existing text of 8.14.2 a) 105) with the following new text:

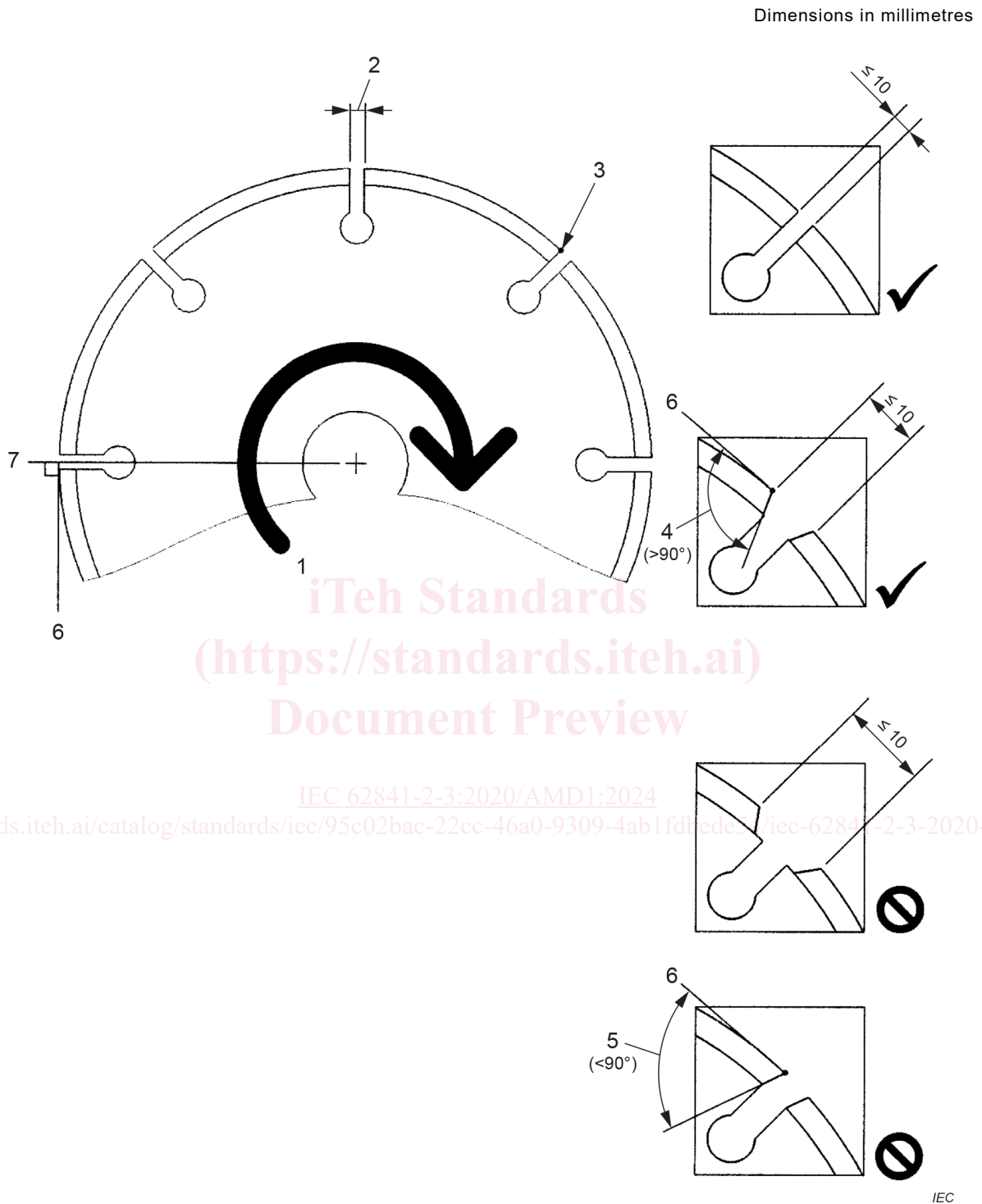
- 105) Information about the maximum diameter of wheel-type wire brushes;

Replace the existing text of 8.14.2 a) 106) with the following new text:

- 106) Information about the permitted construction of cutting-off wheels (**diamond cutting wheel** or bonded reinforced wheel), including the permitted wheel diameter and thickness. If a **diamond cutting wheel** is segmented, instruction that the maximum peripheral gap between segments is 10 mm with no positive rake angle.

NOTE 101 An example of a segmented **diamond cutting wheel** construction is shown in Figure 104.

Replace the existing Figure 104 with the following new Figure 104:



Key

- | | | | |
|---|------------------------|---|---|
| 1 | direction of rotation | 5 | positive rake angle |
| 2 | gap | 6 | line tangent to the periphery of the diamond cutting wheel and perpendicular to the centreline of the diamond cutting wheel and gap |
| 3 | leading tip of segment | 7 | centreline of the diamond cutting wheel and gap |
| 4 | negative rake angle | | |

Figure 104 – Examples of segmented diamond cutting wheel constructions

18 Abnormal operation

Replace the existing text of the eleventh row of Table 4 with the following new text:

| | |
|--|---|
| Prevent exceeding thermal limits as in 18.4 and 18.5.3 | a |
|--|---|

19 Mechanical hazards

Replace the existing text of 19.1 with the following new text:

19.1 Replacement of the first and second paragraph:

Moving and other dangerous parts other than the spindle, the **accessory** and the **flanges** shall be so positioned or enclosed to provide adequate protection against personal injury. The guarding of the **accessory** is covered by 19.101.

Protective enclosures, covers, **guards** and the like shall have adequate mechanical strength for their intended purpose. Except for the **wheel guard** as required by 19.101.2, they shall not be removable without the aid of a tool.

Replace the existing text of the second dash of 19.101.2 with the following new text:

- a **wheel guard** of Type B (grinding) and additional elements that can be fixed to the **wheel guard** Type B (grinding) in order to convert it into a **wheel guard** of Type A (cut-off); or

Add the following new paragraph before the last paragraph of 19.101.2:

Concrete surface grinders shall be supplied with a Type E **wheel guard**.

Replace the existing text of the second row of Table 101 with the following new text:

| | | |
|---------------------|-----------------|--|
| Peripheral grinding | Wheel type 1, 4 | Type G (straight grinder wheel guard) |
| | Cones, plugs | None |

Replace the existing text of the third paragraph of 19.103 with the following new text:

Flanges are not required to be provided if the tool is designed to only accept wheels with

- a non-reusable plate mount or other non-threaded mounting affixed to the wheel, provided the requirements of 19.106 are fulfilled; or
- threaded inserts or projecting studs.

Replace the existing text of 19.104.1 with the following new text:

19.104.1 Flanges required by 19.103 shall be designed so that they secure and locate the abrasive products to the **grinder**. At least one of the **flanges** shall be keyed, screwed, shrunk-on or otherwise secured to prevent rotation relative to the tool spindle.

The **flanges** shall be flat and have no sharp edges.

The **flanges** shall have the dimensions specified in 19.104.2 and 19.104.3 as illustrated in Figure 105 or the dimensions specified in 19.104.4 as illustrated in Figure 106, where D is the outside diameter of the abrasive wheel, G and W are the dimensions of the recess and D_f is the outside diameter of the **flange** clamping surface.

Flanges for wheels under 55 mm diameter may be **unrecessed**.

The **inner flange** and the **outer flange** shall have the same diameter D_f or the overlap of the **inner flange** and **outer flange** bearing surfaces shall be at least equal to dimension C.

In order to prevent interference, the **outer flange** and/or nut shall not extend beyond the plane defined by the lip of the **wheel guard** when mounted with the thickest Type 27, 28 or 29 wheel as specified in accordance with 8.14.2 a) 104).

Compliance is checked by inspection and by measurement.

Add the following new paragraph after the fourth paragraph of 19.104.2:

Compliance is checked by measurement.

Replace the existing text of the second paragraph of NOTE 101 of 19.104.2 with the following new text:

For **wheel types** 27, 28 and 42: The outer dimensions of the **outer flange** shall be limited so that there is no interference with the depressed centre of wheels in accordance with ISO 603-14:2022 and ISO 603-16:2022 as illustrated in Figure Z101 with the dimensions $\emptyset K$, R and F as specified in Table Z101.

Add the following new paragraph after the second paragraph of 19.104.3:

Compliance is checked by inspection and by measurement.

Replace the existing text of the second paragraph of 19.104.4 (below Table 102) with the following new text:

Compliance is checked by measurement.

Replace the existing text of the third paragraph of 19.105 with the following new text:

*The **grinder** is fitted with a steel disc having any one of the thicknesses between the **flange** clamping surfaces of the abrasive product specified in accordance with 8.14.2 a) 104) or 8.14.2 a) 106), as applicable.*

Add the following new subclause:

19.106 A non-reusable plate mount or other non-threaded mounting affixed to the wheel in accordance with 19.103, if any, shall be designed in such a manner as to ensure that there is no damage to the mounting means under a stalled condition.

Compliance is checked by inspection and by the following test.

The tool is fitted with a steel test disc with

- a thickness of at least 2 mm, except as needed to be compatible with the tool mounting means; and*
- the largest diameter in accordance with 8.14.2 a) 101); and*
- an attachment point which may be a hole or other means located at a radial distance of (20 ± 1) mm from the outer periphery of the steel test disc for applying the test forces.*