

INTERNATIONAL STANDARD

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**Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety –
Part 2-22: Particular requirements for hand-held cut-off machines**

**Outils électroportatifs à moteur, outils portables et machines pour jardins et pelouses – Sécurité –
Partie 2-22: Exigences particulières pour les tronçonneuses portatives**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY –**Part 2-22: Particular requirements for hand-held cut-off machines**

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IEC 62841-2-22 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
116/870/FDIS	116/887/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 International Standard 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.

This document is to be used in conjunction with IEC 62841-1:2014.

This document supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC Standard: Particular requirements for hand-held cut-off machines.

Where a particular subclause of IEC 62841-1 is not mentioned in this document, that subclause applies as far as reasonable. Where this document states "addition", "modification" or "replacement", the relevant text in IEC 62841-1 is to be adapted accordingly.

The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- terms defined in Clause 3: **in bold type**
- notes: in small roman type.

Subclauses, notes, tables and figures which are additional to those in IEC 62841-1 are numbered starting from 101.

Subclauses, notes, tables and figures in Annex K and Annex L which are additional to those in the main body of this document are numbered starting from 301.

A list of all parts in the IEC 62841 series, published 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 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.

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.

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

Part 2-22: Particular requirements for hand-held cut-off machines

1 Scope

IEC 62841-1:2014, Clause 1 is applicable, except as follows:

Replacement of the third paragraph:

The **rated voltage** is not more than 250 V for single-phase a.c. or d.c. tools, and 480 V for three-phase a.c. tools.

Addition:

This document applies to hand-held **cut-off machines** fitted with

- one **bonded reinforced wheel** of Type 41 or Type 42; or
- one or more **diamond cutting wheels** with peripheral gaps, if any,
 - having no positive rake angle; and
 - not exceeding 10 mm for **cut-off machines** other than **flush cutters, power cutters** and **wall chasers**;

and with

- a **rated no-load speed** not exceeding a peripheral speed of the wheel of 100 m/s at **rated capacity**; and
- a **rated capacity** not exceeding 430 mm.

NOTE 101 An example of a permitted **diamond cutting wheel** construction is shown in Figure 106.

These tools are intended to cut materials such as metals, concrete, masonry, glass and tile.

This document does not apply to:

- **cut-off machines** that can be converted to a grinder, sander or polisher, which are covered by IEC 62841-2-3;
- circular saws which are covered by IEC 62841-2-5; and
- die grinders and small rotary tools which are covered by IEC 62841-2-23;
- tools intended to cut wood, except for **utility cutters**;
- **cut-off machines** fitted with a **bonded reinforced wheel** of Type 42 with a diameter exceeding 230 mm.

2 Normative references

IEC 62841-1:2014, Clause 2 is applicable, except as follows:

Addition:

IEC 61008-1:2010, *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – Part 1: General rules*¹

IEC 61008-1:2010/AMD1:2012

IEC 61008-1:2010/AMD2:2013

IEC 62841-1:2014, *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements*

ISO 19432-1:2020, *Building construction machinery and equipment – Portable, hand-held, internal combustion engine-driven abrasive cutting machines – Part 1: Safety requirements for cut-off machines for centre-mounted rotating abrasive wheels*

3 Terms and definitions

IEC 62841-1:2014, Clause 3 is applicable, except as follows:

Addition:

3.101 blotter

thin piece of an easily compressible material, between the abrasive wheel and **flange**

3.102

bonded reinforced wheel

accessory for cutting-off applications that are bonded by means of material such as resin, rubber, shellac or other similar bonding agents and which are reinforced by webbing, fabric or filament

Note 101 to entry: **Bonded reinforced wheels** are covered in ISO 603-15:2022 and ISO 603-16:2022.

Note 102 to entry: In the United States of America, **bonded reinforced wheels** are covered in ANSI/UAMA B7.1:2017.

3.103

cut-off machine

hand-held tool designed to cut by means of the periphery of a rotating abrasive cut-off wheel (**bonded reinforced wheel** or **diamond cutting wheel**) where the wheel is fixed on a spindle

Note 101 to entry: See Figure 101.

3.104

diamond cutting wheel

metal **accessory** with the abrasives located on the periphery of the wheel

3.105

flange

collar, disc, or plate between or against which wheels are mounted

¹ There exists a consolidated version (Edition 3.2:2013) which includes IEC 61008-1:2010 and its Amendment 1 (2012) and Amendment 2 (2013).

3.105.1**inner flange**

part that contacts and provides support to the back side of the wheel and is located on the spindle between wheel and tool

3.105.2**outer flange**

part that supports the front side of the wheel and secures and clamps the wheel to the spindle and the **inner flange**

3.106**flush cutter**

cut-off machine that is designed to perform flush cutting operations

Note 101 to entry: See Figure 102.

Note 102 to entry: An example of a flush cutting operation is cutting a groove in a floor that is very close to a wall.

3.107**guide plate**

flat plate mounted on the machine which rests on the material to be cut

3.108**guide roller**

roller mounted on the machine which rests on the material to be cut

3.109**power cutter**

cut-off machine for cutting surfaces or materials with a standing operator and is provided with a front and rear handle that are located behind the rotating abrasive cut-off wheel

Note 101 to entry: See Figure 103.

3.110**rated capacity**

maximum intended diameter of the rotating **accessory** to be fitted on the tool as recommended by the manufacturer's instructions

3.111**utility cutter**

cut-off machine with a **rated capacity** not exceeding 100 mm

Note 101 to entry: See Figure 104.

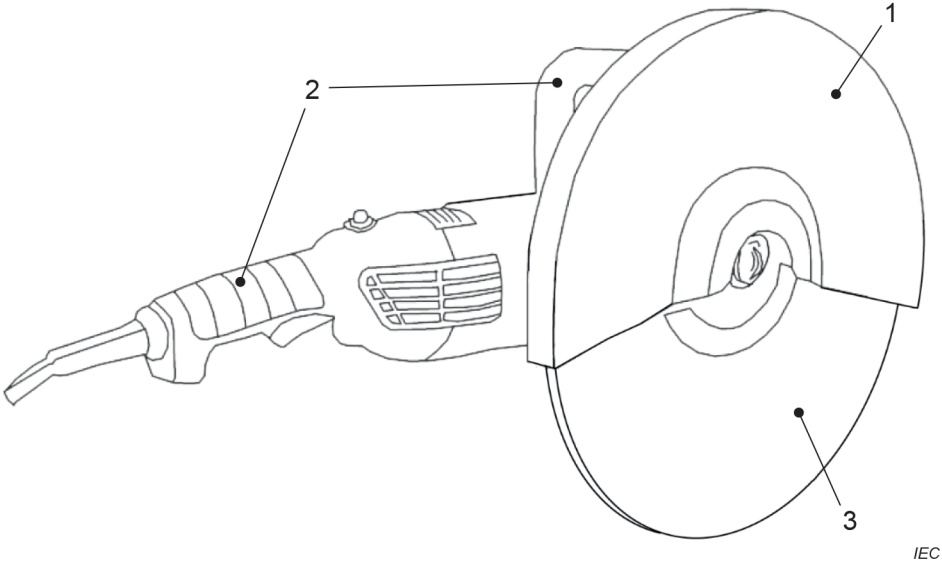
3.112**wall chaser**

cut-off machine on which one or more **diamond cutting wheels** are mounted and used for non-through cutting operations

Note 101 to entry: See Figure 105.

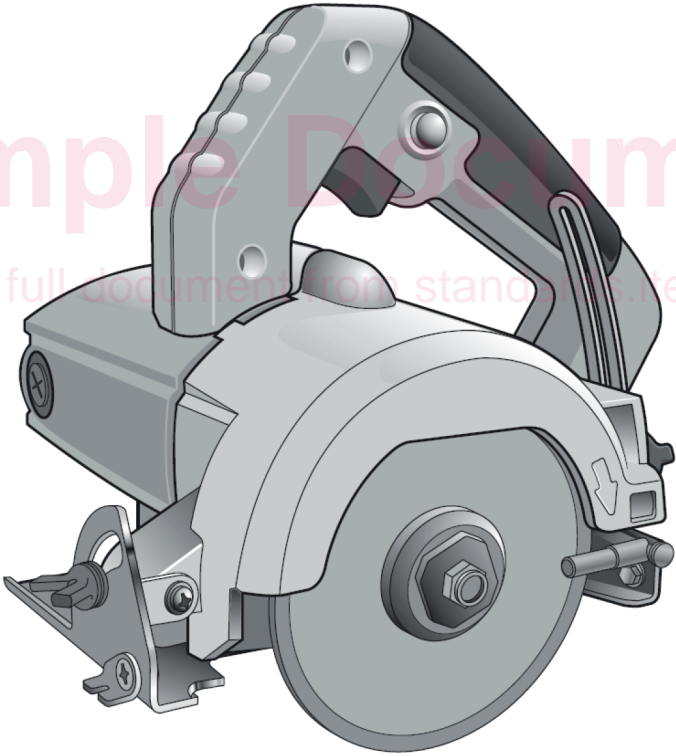
3.113**wheel guard**

device which partly encloses the abrasive wheel and gives protection to the operator



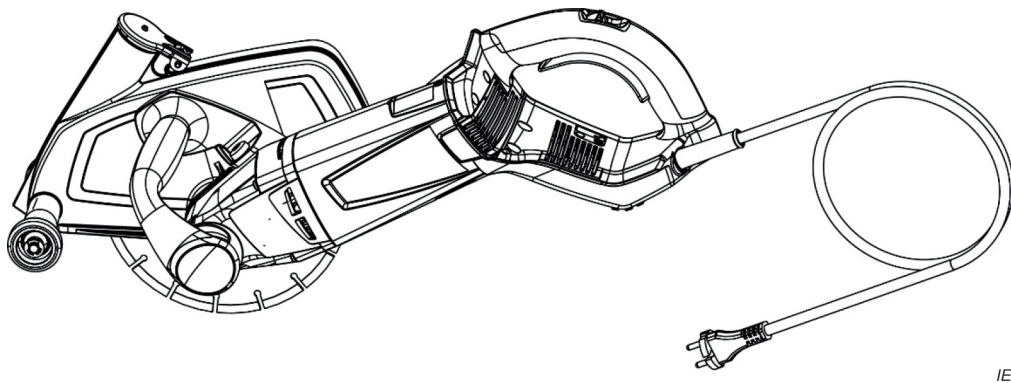
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a) Example of a cut-off machine



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b) Example of a cut-off machine with guide plate and diamond cutting wheel



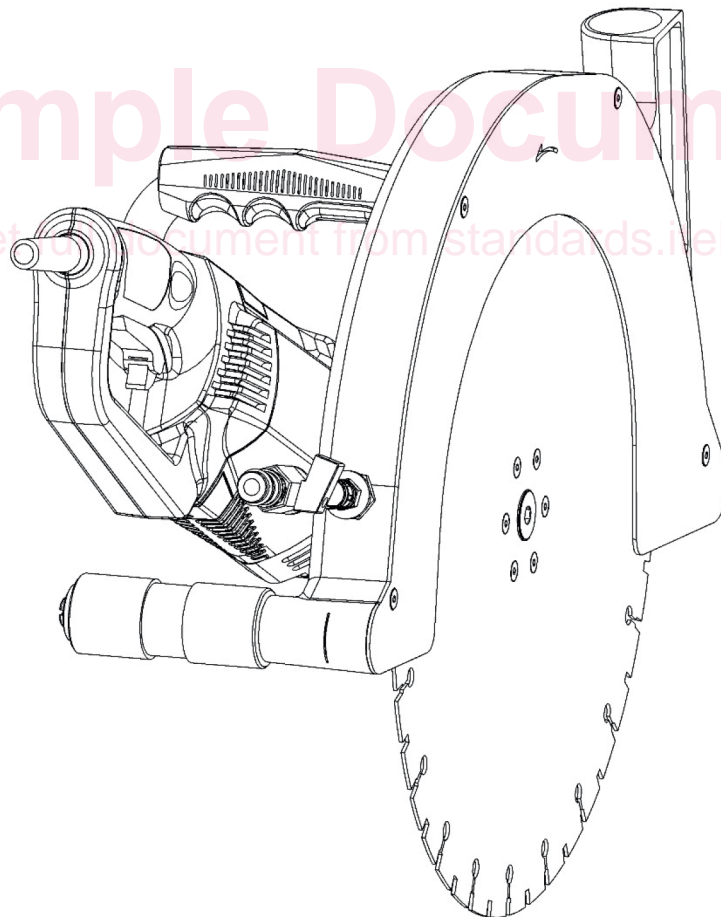
IEC

c) Example of a cut-off machine with dust extraction

Key

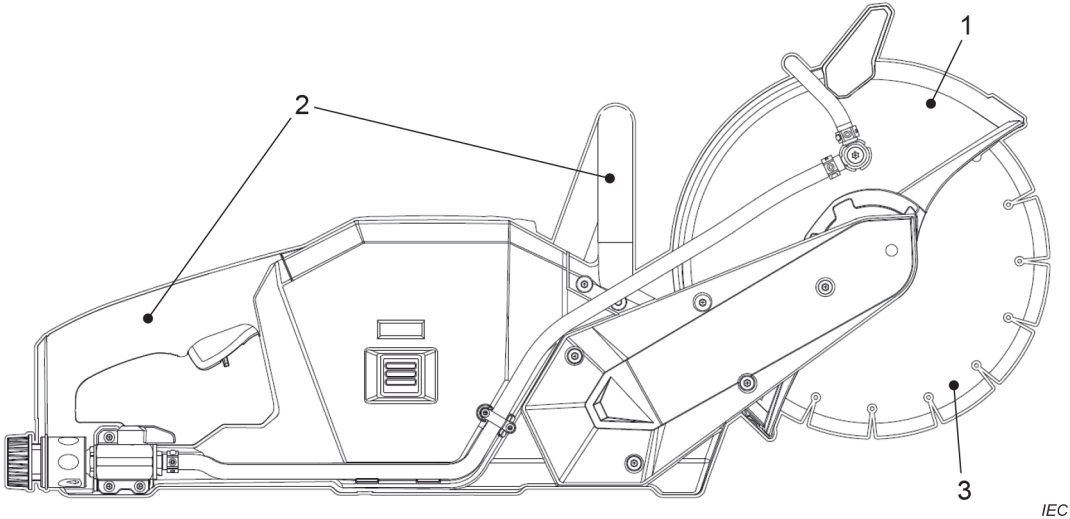
- 1 wheel guard
- 2 handle
- 3 wheel

Figure 101 – Examples of cut-off machines



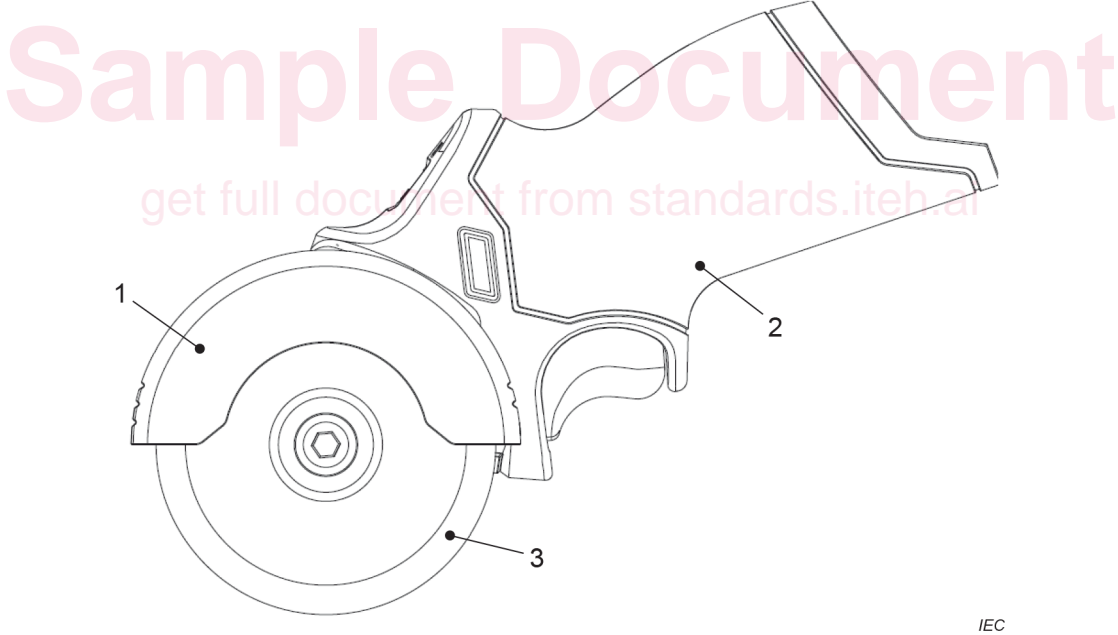
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Figure 102 – Example of a flush cutter with diamond cutting wheel



- Key**
- 1 wheel guard
 - 2 handle
 - 3 wheel

Figure 103 – Example of a power cutter



- Key**
- 1 wheel guard
 - 2 handle
 - 3 wheel

Figure 104 – Example of a utility cutter

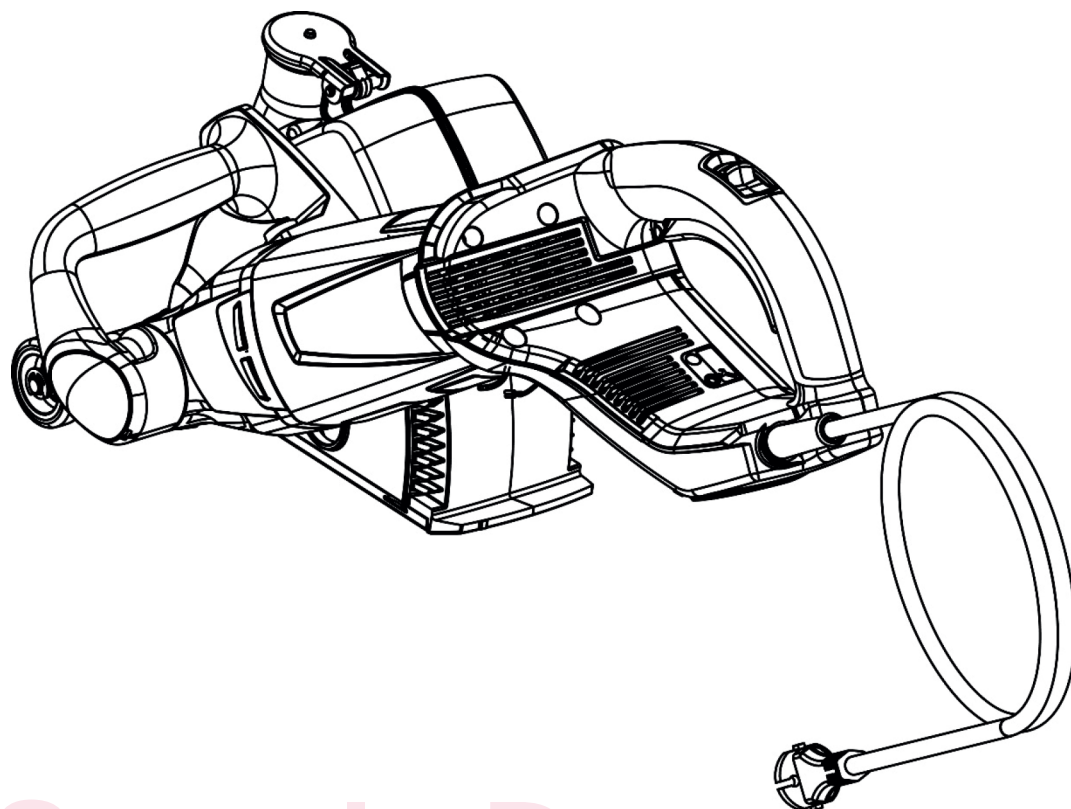


Figure 105 – Example of a wall chaser

4 General requirements

IEC 62841-1:2014, Clause 4 is applicable.

5 General conditions for the tests

IEC 62841-1:2014, Clause 5 is applicable, except as follows:

5.17 Addition:

*The mass of a **cut-off machine** includes the **wheel guard**, the **flanges**, the **handles** and the **guide plate** or **guide roller**, if any.*

6 Radiation, toxicity and similar hazards

IEC 62841-1:2014, Clause 6 is applicable.

7 Classification

IEC 62841-1:2014, Clause 7 is applicable.

8 Marking and instructions

IEC 62841-1:2014, Clause 8 is applicable, except as follows:

8.1 Addition:


Tools shall also be marked with:

- **rated no-load speed**; and
- **rated capacity**.

NOTE 101 The requirement for marking **rated capacity** does not prohibit the additional marking of smaller permitted diameters of the rotating **accessory** other than **rated capacity** (e.g. 230 mm, where 300 mm is the **rated capacity**).

8.2 Addition:

Tools shall also be marked with:

- "  **WARNING** Always wear eye protection" or sign M004 of ISO 7010 (2011-05) or the following product safety label:



The eye protection symbol may be modified by adding other personal protective equipment such as ear protection, dust mask, etc.

NOTE 101 In Canada and the United States of America, the following additional requirement applies:

- **WARNING** To reduce the risk of injury, use only abrasive cut-off wheels rated at least equal to the maximum speed marked on the tool.

In Canada, the equivalent French wording is as follows: "AVERTISSEMENT Pour réduire le risque de blessure, utiliser uniquement les accessoires convenant au moins à la vitesse maximale indiquée sur l'outil."

If the above cautionary markings are included as part of a list of cautionary markings, the words "WARNING To reduce the risk of injury" and "AVERTISSEMENT Pour réduire le risque de blessure" need not be repeated.

8.3 Addition:

The direction(s) of rotation of the spindle shall be indicated on the tool by an arrow, raised or recessed or by any other means no less visible and indelible.

8.14.1.1 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 abrasive cutting-off operations

1) Cut-off machine safety warnings

- a) **Use only bonded reinforced or diamond cut-off wheels for your power tool.** *Just because an accessory can be attached to your power tool, it does not assure safe operation.*

NOTE 101 Use the wording "bonded reinforced" or "diamond" as applicable in item a) above, depending on the permitted wheel construction in accordance with 8.14.2 a) 102).

- b) **Do not use segmented diamond cut-off wheels with a positive rake angle.** *Use of such diamond cut-off wheels can increase the risk of personal injury.*
- c) **Do not use segmented diamond cut-off wheels with a peripheral gap greater than 10 mm.** *Use of such diamond cut-off wheels can increase the risk of personal injury.*

NOTE 102 The warning in item c) above can be omitted for **flush cutters, power cutters and wall chasers.**

- d) **The rated speed of the cut-off wheel 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.*
- e) **Wheels must be used only for recommended 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.*
- f) **Always use undamaged wheel flanges that are of correct diameter for your selected wheel.** *Proper wheel flanges support the wheel thus reducing the possibility of wheel loosening or breakage.*

NOTE 103 The warning in item f) above is omitted for tools that are not required to be provided with **flanges** in accordance with 19.103.3.

- g) **Do not use cut-off wheels that require liquid coolants.** *Using water or other liquid coolants may result in electrocution or shock.*

NOTE 104 The warning in item g) above is omitted for tools specifically designed for use with a **liquid system.**

- h) **Do not use worn down reinforced wheels from larger power tools.** *Wheels intended for a larger power tool are not suitable for the higher speed of a smaller tool and may burst.*

NOTE 105 The warning in item h) above is omitted for tools only designated to be used with **diamond cutting wheels.**

- i) **The outside diameter and the thickness of your cut-off wheel must be within the capacity rating of your power tool.** *Incorrectly sized cut-off wheels cannot be adequately guarded or controlled.*
- j) **The arbour size of wheels and flanges must properly fit the spindle of the power tool.** *Wheels and flanges with arbour holes that do not match the mounting hardware of the power tool will run out of balance, vibrate excessively and may cause loss of control.*

NOTE 106 The text "and flanges" in item j) above is omitted if the tool is provided with a means for mounting wheels other than **flanges** in accordance with 19.103.3.

- k) **Use all mounting screws when mounting diamond wheels directly to the inner flange and ensure they are tightened properly.** *If not mounted correctly, the diamond wheel can get out of balance and cause the wheel to separate from the tool spindle.*

NOTE 107 The warning in item k) above is omitted for tools that are not intended to be directly screwed onto the **inner flange.**

- l) **Do not use damaged cut-off wheels. Before each use, inspect the cut-off wheels for chips and cracks. If the power tool or cut-off wheel is dropped, inspect for damage or install an undamaged cut-off wheel. After inspecting and installing the cut-off wheel, position yourself and bystanders away from the plane of the rotating cut-off wheel 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 cut-off wheels will normally break apart during this test time.*
- m) **Wear personal protective equipment. Depending on the application, use a face shield, safety goggles or safety glasses. 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 operations. The breathing protection must be capable of filtering particles generated by your operation. Prolonged exposure to high intensity noise may cause hearing loss.**