

INTERNATIONAL STANDARD

**Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety –
Part 2-8: Particular requirements for hand-held shears and nibblers**

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INTERNATIONAL STANDARD

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 2-8: Particular requirements for hand-held shears and nibblers

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
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- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 62841-2-8 edition 1.1 contains the first edition (2016-04) [documents 116/277/FDIS and 116/285/RVD] and its amendment 1 (2025-02) [documents 116/859/FDIS and 116/877/RVD].

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 62841-2-8 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 2-8 is to be used in conjunction with the first edition of IEC 62841-1 (2014).

This Part 2-8 supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC Standard: Particular requirements for hand-held shears and nibblers.

Where a particular subclause of Part 1 is not mentioned in this Part 2-8, 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 this document and its amendment 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 2-8: Particular requirements for hand-held shears and nibblers

1 Scope

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

Addition:

This part of IEC 62841 applies to hand-held **shears** and **nibblers**.

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

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

Additional definitions:

3.101

shear

tool intended for shearing of metal sheets, plates and strips

3.102

nibbler

tool intended for punching of metal sheets, plates and strips

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 a **shear** includes the shear blade.*

*The mass of a **nibbler** includes the die holder and the punch.*

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:

8.14.2 b) Addition:

101) Information on the maximum thickness of sheet metal(s) that can be cut.

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 Addition:

The tool is operated continuously for a period of 30 min. The temperature rises are measured at the end of the 30 min.

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:

18.8 Replacement of Table 4:

Table 4 – Required performance levels

Type and purpose of SCF	Minimum Performance Level (PL)
Power switch – prevent unwanted switch-on	a
Power switch – provide desired switch-off	a
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 18.4 and 18.5.3	a

19 Mechanical hazards

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

19.1 Replacement of the first paragraph:

Moving and other dangerous parts of the tool other than the working element shall be so positioned or enclosed to provide adequate protection against personal injury.

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.

21 Construction

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

21.18.1 Addition:

For **shears** and **nibblers**, **power switches** other than **momentary power switches** are permitted.

21.30 This subclause is not applicable.

21.35 This subclause is not applicable.

22 Internal wiring

This clause of Part 1 is applicable.

23 Components

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

23.3 This subclause is not applicable.

24 Supply connection and external flexible cords

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

24.4 *Replacement of the first paragraph:*

Supply cords shall be not lighter than heavy polychloroprene sheathed flexible cable (60245 IEC 66).

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 62841-2-8), 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:

Shears are suspended, the orientation of the tool to be as for cutting a horizontal sheet of metal.

Nibblers are held and used as specified in I.2.5.

I.2.5 Operating conditions

Addition:

Shears are tested at no-load.

NOTE The operating conditions of Table I.101 for **shears** only apply for vibration testing.

Nibblers are tested under load observing the conditions specified in Table I.101.

The temperature requirements of 5.6 are not applicable.

Table I.101 – Operating conditions for shears and nibblers

Orientation	<p>Cutting a horizontal strip of sheet metal with a tensile strength of approximately 390 N/mm², a minimum length of 400 mm and a minimum width of 400 mm.</p> <p>The metal sheet shall have the maximum thickness specified in 8.14.2 b) 101).</p> <p>For tools intended for two hand use in accordance with 8.14.2, the metal sheet used in the test shall be firmly secured to a test bench using resilient material. It shall be mounted so that it does not have any significant resonance in the frequency range that can influence the test result but allow normal operation with good performance. A typical test bench is shown in Figure I.102.</p> <p>For tools intended for one hand use in accordance with 8.14.2, the metal sheet is held by hand and supported by the resilient material to allow normal operation avoiding significant resonances.</p> <p>Each cut strip of 50 mm wide for the width of 400 mm shall be as near as possible to the support.</p> <p>During the test, the tool shall be arranged so that the operator can have an upright or almost upright posture and work the nibbler or shear cutting horizontally. The operator shall be able to hold the tool comfortably during the test.</p>
Tool bit	<p>Nibblers are operated with a punch and die of the size specified for the sheet metal used in the test.</p> <p>Shears are operated with shear blades of the size specified for the sheet metal used in the test.</p> <p>They shall be sharp and in good condition.</p>
Feed force	Suitable feed force shall be applied to ensure a stable and smooth operation.
Test cycle	<p>Cutting off one 50 mm wide strip across the 400 mm width of the sheet metal.</p> <p>The measurement starts when the blade enters the sheet metal and stops when the blade leaves the sheet metal.</p>

I.3 Vibration

This clause of Part 1 is applicable except as follows:

I.3.3.2 Location of measurement

Addition:

Figure I.101 shows the positions for different **shears** and **nibblers**.

I.3.5.1 General

Addition:

For **battery** operated tools, the tests are conducted with the lightest **battery** in accordance with K.8.14.2 e) 2) of Part 1 that has sufficient capacity to complete the 15 measurements as specified in I.3.6.1 of Part 1, under the operating conditions described in Table I.101.

I.3.5.3 Operating conditions

Addition:

Shears and **nibblers** are tested under load observing the conditions shown in Table I.101.

I.3.6.2 Declaration of the vibration total value

Addition:

The vibration total value a_h of the handle with the highest emission and the uncertainty K shall be declared.

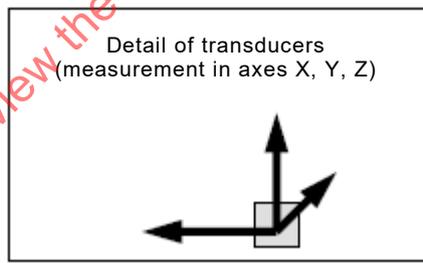
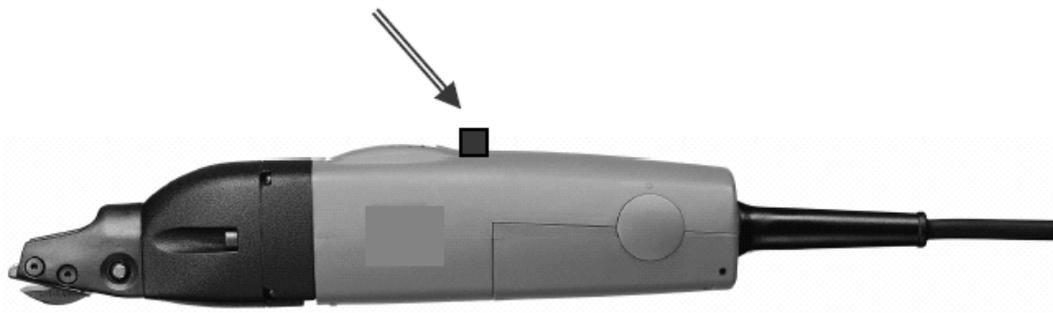
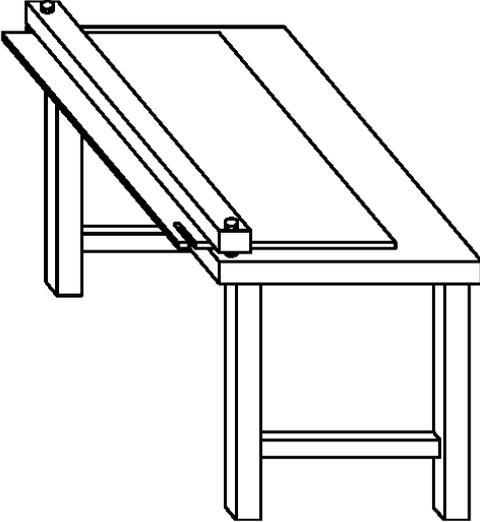


Figure I.101 – Position of transducers for shears and nibblers



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Figure I.102 – Test bench with workpiece

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Annex K (normative)

Battery tools and battery packs

K.1 *Addition:*

All clauses of this Part 2-8 apply unless otherwise specified in this annex.

K.12.2.1 This subclause is not applicable.

K.24.4 This subclause is not applicable.

Bibliography

The bibliography of Part 1 is applicable.

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Part 2-8: Particular requirements for hand-held shears and nibblers

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- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

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This Part 2-8 is to be used in conjunction with the first edition of IEC 62841-1 (2014).

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Where a particular subclause of Part 1 is not mentioned in this Part 2-8, 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.

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

Part 2-8: Particular requirements for hand-held shears and nibblers

1 Scope

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

Addition:

This part of IEC 62841 applies to hand-held **shears** and **nibblers**.

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

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

Additional definitions:

3.101

shear

tool intended for shearing of metal sheets, plates and strips

3.102

nibbler

tool intended for punching of metal sheets, plates and strips

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 a **shear** includes the shear blade.*

*The mass of a **nibbler** includes the die holder and the punch.*

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:

8.14.2 b) Addition:

101) Information on the maximum thickness of sheet metal(s) that can be cut.

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 Addition:

The tool is operated continuously for a period of 30 min. The temperature rises are measured at the end of the 30 min.

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:

18.8 Replacement of Table 4:

Table 4 – Required performance levels

Type and purpose of SCF	Minimum Performance Level (PL)
Power switch – prevent unwanted switch-on	a
Power switch – provide desired switch-off	a
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 18.4 and 18.5.3	a

19 Mechanical hazards

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

19.1 Replacement of the first paragraph:

Moving and other dangerous parts of the tool other than the working element shall be so positioned or enclosed to provide adequate protection against personal injury.

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.

21 Construction

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

21.18.1 Addition:

For **shears** and **nibblers**, **power switches** other than **momentary power switches** are permitted.

21.30 This subclause is not applicable.

21.35 This subclause is not applicable.

22 Internal wiring

This clause of Part 1 is applicable.

23 Components

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

23.3 This subclause is not applicable.

24 Supply connection and external flexible cords

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

24.4 *Replacement of the first paragraph:*

Supply cords shall be not lighter than heavy polychloroprene sheathed flexible cable (60245 IEC 66).

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 62841-2-8), 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:

Shears are suspended, the orientation of the tool to be as for cutting a horizontal sheet of metal.

Nibblers are held and used as specified in I.2.5.

I.2.5 Operating conditions

Addition:

Shears are tested at no-load.

NOTE The operating conditions of Table I.101 for **shears** only apply for vibration testing.

Nibblers are tested under load observing the conditions specified in Table I.101.

The temperature requirements of 5.6 are not applicable.

Table I.101 – Operating conditions for shears and nibblers

Orientation	<p>Cutting a horizontal strip of sheet metal with a tensile strength of approximately 390 N/mm², a minimum length of 400 mm and a minimum width of 400 mm.</p> <p>The metal sheet shall have the maximum thickness specified in 8.14.2 b) 101).</p> <p>For tools intended for two hand use in accordance with 8.14.2, the metal sheet used in the test shall be secured to a test bench using resilient material. It shall be mounted so that it does not have any significant resonance in the frequency range that can influence the test result but allow normal operation with good performance. A typical test bench is shown in Figure I.102.</p> <p>For tools intended for one hand use in accordance with 8.14.2, the metal sheet is held by hand and supported by the resilient material to allow normal operation avoiding significant resonances.</p> <p>Each cut strip of 50 mm wide for the width of 400 mm shall be as near as possible to the support.</p> <p>During the test, the tool shall be arranged so that the operator can have an upright or almost upright posture and work the nibbler or shear cutting horizontally. The operator shall be able to hold the tool comfortably during the test.</p>
Tool bit	<p>Nibblers are operated with a punch and die of the size specified for the sheet metal used in the test.</p> <p>Shears are operated with shear blades of the size specified for the sheet metal used in the test.</p> <p>They shall be sharp and in good condition.</p>
Feed force	Suitable feed force shall be applied to ensure a stable and smooth operation.
Test cycle	<p>Cutting off one 50 mm wide strip across the 400 mm width of the sheet metal.</p> <p>The measurement starts when the blade enters the sheet metal and stops when the blade leaves the sheet metal.</p>

I.3 Vibration

This clause of Part 1 is applicable except as follows:

I.3.3.2 Location of measurement

Addition:

Figure I.101 shows the positions for different **shears** and **nibblers**.

I.3.5.1 General

Addition:

For **battery** operated tools, the tests are conducted with the lightest **battery** in accordance with K.8.14.2 e) 2) of Part 1 that has sufficient capacity to complete the 15 measurements as specified in I.3.6.1 of Part 1, under the operating conditions described in Table I.101.

I.3.5.3 Operating conditions

Addition:

Shears and **nibblers** are tested under load observing the conditions shown in Table I.101.

I.3.6.2 Declaration of the vibration total value

Addition:

The vibration total value a_h of the handle with the highest emission and the uncertainty K shall be declared.