



BSI Standards Publication

Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery — Safety

Part 4-8: Particular requirements for shredders/chippers

National foreword

This British Standard is the UK implementation of EN IEC 62841-4-8:2025+A11:2025. It is derived from IEC 62841-4-8:2025. It supersedes BS EN 50434:2014, which will be withdrawn on 30 April 2029.

The start and finish of text introduced or altered by amendment A11 is indicated in the text by tags. Tags indicating changes to text carry the number of the CENELEC amendment. For example, text altered by CENELEC amendment A11 is indicated by A11 A11.

The UK participation in its preparation was entrusted to Technical Committee CPL/116, Safety of motor-operated electric tools.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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For the Great Britain market (England, Scotland and Wales), if UK Government has designated this publication for conformity with UKCA marking (or similar) legislation, it may contain an additional National Annex. Where such a National Annex exists, it shows the correlation between this publication and the relevant UK legislation. If there is no National Annex of this kind, the relevant Annex ZA or ZZ in the body of the European text will indicate the relationship to UK regulation applicable in Great Britain. References to EU legislation may need to be read in accordance with the UK designation and the applicable UK law. Further information on designated standards can be found at www.bsigroup.com/standardsandregulation.

For the Northern Ireland market, UK law will continue to implement relevant EU law subject to periodic confirmation. Therefore Annex ZA/ZZ in the European text, and references to EU legislation, are still valid for this market.

UK Government is responsible for legislation. For information on legislation and policies relating to that legislation, consult the relevant pages of www.gov.uk.

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Amendments/corrigenda issued since publication

Date	Text affected
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English Version

Electric motor-operated hand-held tools, transportable tools and
lawn and garden machinery - Safety - Part 4-8: Particular
requirements for shredders/chippers
(IEC 62841-4-8:2025)

Outils électroportatifs à moteur, outils portables et machines
pour jardin et pelouses - Sécurité - Partie 4-8: Exigences
particulières pour les déchiqueteuses/machines à
déchiqueter
(IEC 62841-4-8:2025)

Elektrische motorbetriebene handgeführte Werkzeuge,
transportable Werkzeuge und Rasen- und
Gartenmaschinen - Sicherheit - Teil 4-8: Besondere
Anforderungen für Schredder/Häcksler
(IEC 62841-4-8:2025)

This European Standard was approved by CENELEC on 2025-03-07. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 116/853/FDIS, future edition 1 of IEC 62841-4-8, prepared by TC 116 "Safety of motor-operated electric tools" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62841-4-8:2025.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2026-04-30 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2029-04-30 document have to be withdrawn

This document supersedes EN 50434:2014 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZZ, which is an integral part of EN IEC 62841-4-8:2025/A11:2025.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62841-4-8:2025 was approved by CENELEC as a European Standard without any modification.

European foreword to Amendment A11

This document (EN IEC 62841-4-8:2025/A11:2025) has been prepared by CLC/TC 116 “Safety and environmental aspects of motor-operated electric tools”.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2026-04-30
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2029-04-30

This series is divided into four parts.

Part 1: General requirements which are common to most hand-held electric motor operated tools (for the purpose of this document referred to simply as tools) which could come within the scope of this document;

Part 2, 3 or 4: Requirements for particular types of tools which either supplement or modify the requirements given in Part 1 to account for the particular hazards and characteristics of these specific tools.

Part 4-8 is used in conjunction with EN 62841-1:2015 and all of its amendments and corrigenda (if any).

Part 4-8 supplements or modifies the corresponding clauses in EN 62841-1:2015 and all of its amendments and corrigenda (if any), so as to convert it into the European Standard: Particular requirements for shredders/chippers.

Where a particular subclause of Part 1 is not mentioned in the Part 4-8, that subclause applies as far as relevant. When this document 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 smaller roman type.

The terms defined in Clause 3 are printed in **bold typeface**.

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

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62841-4-8:2025 are prefixed “Z”.

This document follows the overall requirements of EN ISO 12100:2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZZ, which is an integral part of this document.

Compliance with the clauses of Part 1 together with Part 4-8 provides one means of conforming with the essential health and safety requirements of the EU Legislation concerned.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

A11 Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

Annex ZA of EN 62841-1:2015 as impacted by EN 62841-1:2015/A11:2022 is applicable, except as follows:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
<i>Addition:</i>				
IEC 60664-3	2016	Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution	EN 60664-3	2017
IEC 60664-4	2005	Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress	EN 60664-4	2006
			+ corrigendum Oct.	2006
IEC 61058-1-1	2016	Switches for appliances – Part 1-1: Requirements for mechanical switches	EN 61058-1-1	2016
			+ AC	2019-02
IEC 61058-1-2	2016	Switches for appliances – Part 1-2: Requirements for electronic switches	EN 61058-1-2	2016
			+ AC	2019-02
IEC 61058-2-6	2018	Switches for appliances – Part 2-6: Particular requirements for switches used in electric motor-operated hand-held tools, transportable tools and lawn & garden machinery	EN IEC 61058-2-6	2019
IEC 61672-1	2013	Electroacoustics – Sound level meters – Part 1: Specifications	EN 61672-1	2013
IEC 62841-1	2014	Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements	EN 62841-1	2015
			+ AC	2015
			+ A11	2022

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 354	2003	Acoustics – Measurement of sound absorption in a reverberation room	EN ISO 354	2003
ISO 13857	2019	Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs	EN ISO 13857	2019
ISO 21920-3	2021	Geometrical product specifications (GPS) – Surface texture: Profile – Part 3: Specification operators	EN ISO 21920-3	2022
<i>Replacement:</i>				
IEC 61058-1	2016	Switches for appliances – Part 1: General requirements	EN IEC 61058-1	2018
ISO 3744	2010	Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections	EN ISO 3744	2010
ISO 11201	2010	Acoustics – Noise emitted by machinery and equipment – Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections	EN ISO 11201	2010 

A11 Annex ZZ (informative)

Relationship between this European Standard and the essential requirements of Directive 2006/42/EC aimed to be covered

This European Standard has been prepared under a Commission's standardization request "M/396 Mandate to CEN and CENELEC for Standardisation in the field of machinery" to provide one voluntary means of conforming to essential requirements of Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast)

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZZ.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZZ.1 — Correspondence between this European Standard and Annex I of Directive 2006/42/EC

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
1.1.2 a)	4, L.4.301	
1.1.2 c)	8.14.1.101, 8.14.2, K.8.14.1.101, K.8.14.2, L.8.302	-
1.1.2 d)	8.14.1.101, 8.14.2 b), K.8.14.1.101, K.8.14.2	-
1.1.5 (Design of machinery to facilitate its handling)	19.104	-
1.1.6 (Ergonomics)	21.18	-
1.1.7 (Operating positions)	8.14.2 b)	-
1.2.1 (Safety and reliability of control systems)	18.8.1	-
1.2.2 (Control devices)	21.18	-
1.2.6 (Failure of the power supply)	21.18.Z101, 23.3	-
1.3.1 (Risk of loss of stability)	19.7	-
1.3.2 (Risk of break-up during operation)	17.2, 20.101, K.24.301, L.17.301	-
1.3.3 (Risk due to falling or ejected objects)	19.105	-
1.3.7 (Risks related to moving parts)	19.1, 19.101, 19.102, 19.103, K.19.103.1	-

The relevant Essential Requirements of Directive 2006/42/EC	Clause(s) / sub-clause(s) of this EN	Remarks / Notes
1.3.8.2 (Moving parts involved in the process)	19.101, 19.102, 19.103, K.19.103	-
1.4 (Required characteristics of guards and protective devices)	19.1, 19.101, 19.102, 19.103, 20.101, K.19.103	-
1.5.1 (Risks due to electricity supply)	7.2, 9.2, 17.2, 18.5, 20.5, 21.102, 23.1.10, 24.2, 24.13, 28.1, K.7.2, K.14.2, K.21.303, K.23.1.10, K.23.1.201, K.24.303, K.28.1, L.9.301, L.24.301, L.24.302, L.24.303	-
1.5.5 (Extreme temperatures)	K.12.1	-
1.5.6 (Risks due to fire)	21.301	-
1.5.13 (Emissions of hazardous material and substances)	K.23.301	-
1.6.2 (Access to operating positions and servicing points)	19.103, K.19.103	-
1.6.3 (Isolation of energy sources)	K.21.18.Z301, K.21.301, K.21.302, K.24.302	-
1.7.1 (Information and warnings on the machinery)	8.1, 8.2, 8.4, K.8.1, K.8.2, L.8.301	-
1.7.3 (Marking of machinery)	8.3, 8.4, 8.12, K.8.3, L.8.301	-
1.7.4.2 (Contents of the instructions)	8.14.1, 8.14.1.101, 8.14.2, 8.14.3, K.8.14.1, K.8.14.1.101, K.8.14.2, K.8.14.3, L.8.302	-

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard. 

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS,
TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY –
SAFETY –****Part 4-8: Particular requirements for shredders/chippers****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.
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- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 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.

IEC 62841-4-8 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
116/853/FDIS	116/867/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 shredders/chippers.

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:

- test specifications: *in italic type*;
- terms defined in Clause 3: **in bold 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 4-8: Particular requirements for shredders/chippers

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. machines, and 480 V for three-phase a.c. machines.

Addition:

This document specifies safety requirements and their verification for the design and construction of hand fed, **shredders/chippers** with an integral electric motor, with or without vacuum assisted collection, which are designed to reduce organic material to smaller pieces and are used in a stationary position by an operator standing on the ground. This document applies to **shredders/chippers** with **feed intake openings** or **feed safety openings** that in total will fit into a square of 250 mm × 250 mm.

NOTE 101 The requirements for the measurement of the square of 250 mm × 250 mm are specified in 19.101.1.

In this document, **shredders/chippers** are referred to collectively as machine(s).

This document does not cover requirements for

- machines powered by combustion engines; or
- machines driven by an external power source; or
- machines with powered discharge intended to broadcast material or load vehicles; or
- machines with mechanically powered feed intake or **attachments**; or
- wood chippers for forestry, agriculture, horticulture and landscaping.

2 Normative references

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

Addition:

IEC 60664-3:2016, *Insulation coordination for equipment within low-voltage systems – Part 3: Use of coating, potting or moulding for protection against pollution*

IEC 60664-4:2005, *Insulation coordination for equipment within low-voltage systems – Part 4: Consideration of high-frequency voltage stress*

IEC 61058-1-1:2016, *Switches for appliances – Part 1-1: Requirements for mechanical switches*

IEC 61058-1-2:2016, *Switches for appliances – Part 1-2: Requirements for electronic switches*

IEC 61058-2-6:2018, *Switches for appliances – Part 2-6: Particular requirements for switches used in electric motor-operated hand-held tools, transportable tools and lawn and garden machinery*

IEC 61672-1:2013, *Electroacoustics – Sound level meters – Part 1: Specifications*

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

ISO 354:2003, *Acoustics – Measurement of sound absorption in a reverberation room*

ISO 13857:2019, *Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs*

ISO 21920-3:2021, *Geometrical product specifications (GPS) – Surface texture: Profile – Part 3: Specification operators*

Replacement:

IEC 61058-1:2016, *Switches for appliances – Part 1: General requirements*

ISO 3744:2010, *Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Engineering methods for an essentially free field over a reflecting plane*

ISO 11201:2010, *Acoustics – Noise emitted by machinery and equipment – Determination of emission sound pressure levels at a workstation and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections*

3 Terms and definitions

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

Addition:

3.101

appliance inlet

device which is incorporated in the enclosure of the machine for insertion of an electrical plug connection to the mains supply

3.102

debris collector

part or combination of parts that is required for **normal operation** of the machine and provides a means for collecting organic material from the **discharge chute**

3.103

direct opening action

achievement of contact separation as a direct result of a specified movement of the switch actuator through non-resilient members (e.g. non-dependent upon springs)

3.104

discharge chute

extension of the opening through which the shredded or chipped material is discharged

3.105**feed intake opening**

opening through which material is inserted to be fed to the **shredding means**

Note 101 to entry: A **feed intake opening** can become a **feed safety opening(s)** if the relevant safety distance from the **shredding means** is met.

3.106**feed safety opening**

opening through which material is passed and which is located at the relevant safety distance from the **shredding means**

Note 101 to entry: A feed safety opening can be the same as the **feed intake opening** in 3.105 or at some point between the **feed intake opening** and the **shredding means**.

3.107**maximum speed**

highest steady-state **shredding means** speed attainable under all conditions of **normal use**, including no-load, when adjusted in accordance with the manufacturer's specifications and/or instructions

Note 101 to entry: The steady-state **shredding means** speed excludes transients such as overshoot that can occur before attaining a steady-state condition.

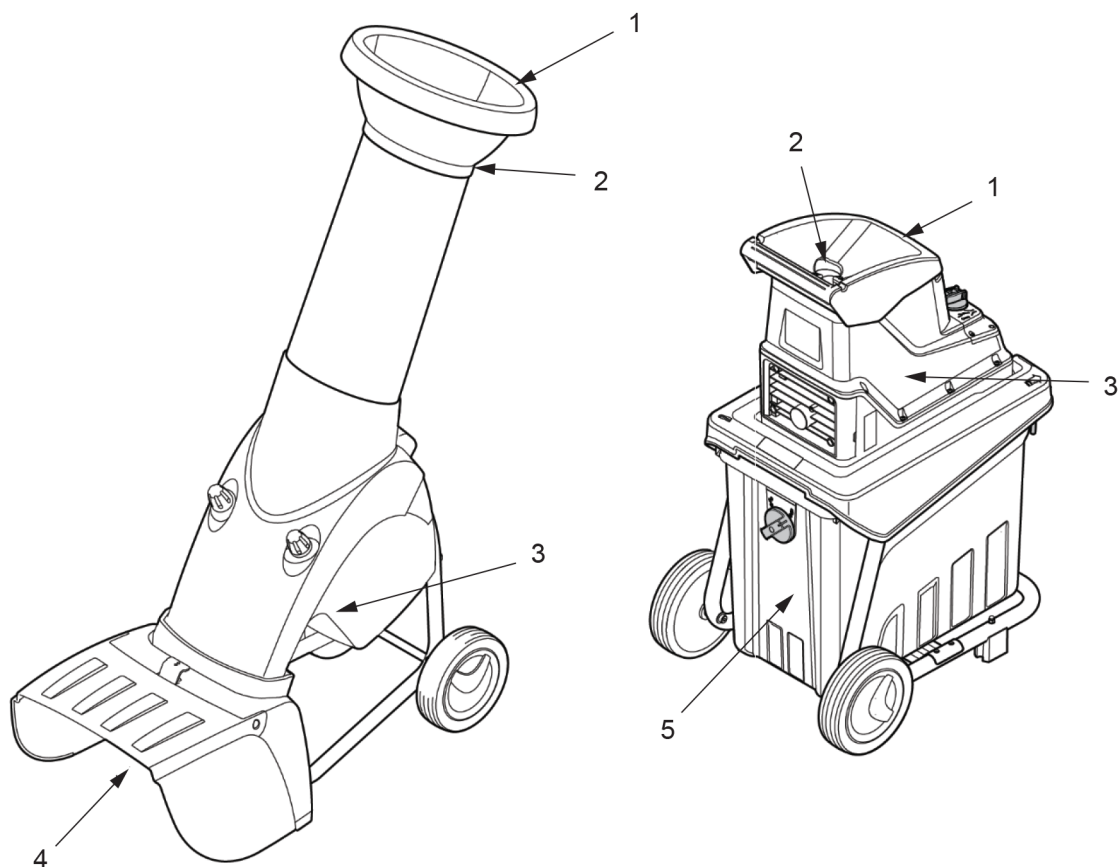
3.108**screen****grid**

perforated piece or bar(s) located between the **shredding means** and **discharge chute** or opening of the machine to assist in reducing organic materials to smaller pieces

3.109**shredder/chipper**

machine designed for use in a stationary position having a **shredding means** for the purpose of reducing organic materials to smaller pieces

Note 101 to entry: See Figure 101.



IEC

Key

- 1 feed intake opening
- 2 feed safety opening
- 3 shredding means
- 4 discharge chute
- 5 debris collector

Figure 101 – Examples of a shredder/chipper

3.110

shredding means

mechanism consisting of one or more cutting means with or without a **screen (grid)**, designed to reduce the size of organic material to smaller pieces

4 General requirements

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

Replacement of the first paragraph:

Machines shall be so constructed that they operate safely so as to cause no danger to persons or surroundings, both under intended use as well as under reasonably foreseeable misuse.

5 General conditions for the tests

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

5.17 Addition:

*The mass of the machine includes the **shredding means** and **debris collector** (empty) (if any), in the heaviest configuration in accordance with 8.14.2.*

5.101 *The tests are performed using all **shredding means** in accordance with 8.14.2 a) 104).*

6 Radiation, toxicity and similar hazards

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

7 Classification

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

7.2 Addition:

Class I tools (machines) and **class II tools** (machines) shall be at least IPX4. **Class III tools** (machines) shall be at least IPX1.

8 Marking and instructions

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

8.1 Replacement of the third dash:

- for machines intended to be operated continuously, the **rated input**, in watts, or **rated current**, in amperes. The **rated input** or **rated current** to be marked on the machine is the total maximum input or current that can be drawn from external circuit at the same time. If a machine has alternative components which can be selected by a **control device**, the **rated input** or **rated current** is that corresponding to the highest loading possible;

Addition:

- for machines intended to be operated intermittently, the **rated input**, in watts, or **rated current**, in amperes. The **rated input** or **rated current** to be marked on the machine is the total maximum input or current that can be drawn from external circuit at the same time. If a machine has alternative components which can be selected by a **control device**, the **rated input** or **rated current** is that corresponding to the highest loading possible. The marking of the **rated input** or **rated current** value shall be followed by the text "(P40)".

8.2 Addition:

Shredders/chippers shall be marked with the following safety warnings:

- "⚠️ WARNING – Rotating blades. Keep hands and feet out of openings while machine is running" or one of the product safety labels specified in Figure AA.1;
- "⚠️ WARNING – Keep bystanders away", or "⚠️ WARNING – Keep bystanders away by at least _____", where "_____" is the recommended minimum distance between the machine and the bystander, or one of the product safety labels specified in Figure AA.2;

- "⚠️ WARNING – Beware of thrown objects" or a relevant safety sign of ISO 7010 or the product safety label specified in Figure AA.3;
- "⚠️ WARNING – Remove plug from mains before maintenance or if the cord is damaged" or one of the product safety labels specified in Figure AA.4;
- "Wear eye protection" or a relevant safety sign of ISO 7010 or one of the product safety labels specified in Figure AA.5;
- "Wear ear protection" or a relevant safety sign of ISO 7010 or the product safety label specified in Figure AA.6. This marking may be omitted if the measured A-weighted emission sound pressure level at the operator's ear in accordance with Annex I does not exceed 85 dB(A);

A combination of ISO 7010 safety signs for eye and ear protection is allowed. In addition, a combination of product safety labels as specified in Figure AA.7 is allowed.

- "Wear protective gloves" or symbol ISO 7010-M009:2011-05;
- "⚠️ WARNING – Wait until all machine components have completely stopped before touching them" or the product safety label specified in Figure AA.8. This marking shall be located in the vicinity of the **discharge chute** and also visible before opening or removing any **guard** in accordance with 19.103 that is designed to be opened or removed for **user maintenance** that permits access to moving parts in accordance with 8.14.2 c) 106). This requirement may be fulfilled by one or more warnings or product safety labels;
- when a **guard** or **debris collector** is so positioned or shaped that it could be misused as a step, there shall be a warning marking "Do not use as a step" or symbol ISO 7010-P024:2011-05, located as close as practicable to the **guard** or **debris collector**.

8.3 Addition:

ⓘ The **shredding means**, where replaceable during **user maintenance**, shall be marked to identify the part number(s) and the manufacturer, importer or supplier. This marking is not required to be clearly discernible from the outside of the machine.

Replacement of the sixth list item:

- the mass of the machine in kg. For this requirement, the mass of the machine shall be the mass specified in 8.14.3. ⓘ

8.4 Addition:

The warning marking "Do not use as a step" or symbol ISO 7010-P024:2011-05 specified in 8.2 may be located on the **guard** or **debris collector** if it is a **detachable part**.

The warning or product safety label that is visible before opening or removing any **guard** in accordance with 19.103 specified in 8.2 may be located on the **guard** if it is a **detachable part**.

8.9 Addition:

This requirement is not applicable for the **power switch**.

8.12 Replacement of the first paragraph:

Markings required by this document shall be legible and durable. Product safety labels shall be in contrast such as colour, texture, or relief, to their background such that the information or instructions provided by the product safety labels are clearly legible when viewed with normal vision from a distance of (500 ± 50) mm. Product safety labels having an adhesive backing shall be in accordance with the colour requirements of ISO 3864-2. If markings or product safety labels are embossed, etched, stamped or moulded, contrasting colours are not required.

8.14.1 Addition:

The additional safety instructions as specified in 8.14.1.101 shall be given. These instructions may be printed separately from the "General Machine Safety Warnings".

NOTE 101 "General Machine Safety Warnings" are referred to as "General Power Tool Safety Warnings" in IEC 62841-1:2014.

8.14.1.1 General power tool safety warnings

2) Electrical safety

Modification of item c):

For machines classified at least IPX4, this warning may be replaced as specified below.

- c) **Do not operate the power tool in rain or wet conditions.** *This may increase the risk of electric shock.*

NOTE 101 In accordance with IEC 62841-1:2014, 8.14.1, it is possible to replace the term "power tool" with an appropriate term such as "machine" in the warnings above.

8.14.1.101 Safety instructions for shredders/chippers

The term "machine" may be replaced by alternate wording (e.g. "shredder", "chipper", "shredder/chipper" or "mulcher").

Shredder/chipper safety warnings:

- a) **Do not use the machine in bad weather conditions, especially when there is a risk of lightning.** *This decreases the risk of being struck by lightning.*
- b) **Do not use dull or damaged shredding means.** *Unsharpened or damaged shredding means may increase the risk of kickback.*
- c) **Check the debris collector frequently for wear or deterioration.** *A worn or damaged debris collector may increase the risk of personal injury.*

NOTE 101 The term "collector" in item c) above can be replaced by the term "bag".

NOTE 102 The warning in item c) above is omitted for machines that are not intended to be used with a **debris collector**.

- d) **Keep guards in place. Guards must be in working order and be properly mounted.** *A guard that is loose, damaged, or is not functioning correctly may result in personal injury.*
- e) **Keep all cooling air inlets clear of debris.** *Blocked air inlets and debris may result in overheating or risk of fire.*
- f) **Operate the machine on firm level ground.** *Operating the machine on firm level ground reduces the risk of the machine falling over and reduces the risk of injury.*
- g) **While operating the machine, always wear close fitting gloves appropriate for protecting against mechanical risks such as puncture (e.g. thorns or splinters) and cuts (e.g. while clearing blockages).** *This reduces the risk of injury to hands while feeding long or multiple branches and during maintenance.*

- h) **While operating the machine, always wear long trousers.** *Exposed skin increases the likelihood of injury from branches and thrown objects.*
- i) **While operating the machine, always wear non-slip and protective footwear. Do not operate the machine when barefoot or wearing open sandals.** *This reduces the risk of injury to the feet.*
- j) **Never allow the hands, other parts of the body or clothing to enter the feed intake opening.** *Putting hands, other parts of the body or clothing into the feed intake opening increases the risk of injury.*
- k) **When feeding material into the machine, be extremely careful that pieces of metal, rocks, bottles, cans, cables or other foreign objects are not included.** *Solid objects can be thrown from the machine and cause injury.*
- l) **Use extra caution when feeding long branches into the intake opening.** *Branches can be kicked back and cause injuries.*
- m) **Switch off and remove plug from mains if the cord is entangled or damaged.** *Entangled or damaged cords can increase the risk of electric shock.*
- n) **Do not touch blades and other hazardous moving parts while they are still in motion.** *This reduces the risk of injury from moving parts.*
- o) **When clearing jammed material, emptying the debris collector or cleaning the machine, make sure the power switch is off and the power cord is disconnected.** *Unexpected operation of the machine may result in serious personal injury.*

NOTE 103 The term "collector" in item o) above can be replaced by the term "bag".

NOTE 104 The text ", emptying the debris collector" in item o) above can be omitted for machines that are not intended to be used with a **debris collector**.

- p) **Never leave the machine running unattended. Turn it off and do not leave the machine until it comes to a complete stop.** *An unattended running machine is an uncontrolled hazard.*

8.14.2 a)

Replacement of item 5):

- 5) Illustrated description of functions as well as separate modes of operation, where applicable;

Addition:

- 101) Explanation of the safety devices that the **shredder/chipper** incorporates as part of the original equipment;
- 102) Information regarding pre-operating procedures and daily maintenance routines, as well as the consequences of improper maintenance;
- 103) Explanation of the term "(P40)" if applicable;
- 104) Information regarding the recommended **shredding means** to be used on the **shredder/chipper**;
- 105) A general description of the machine, the intended use, instructions for the proper use of the **shredder/chipper** including advice on what the **shredder/chipper** should be used for, how to use it for the intended purpose(s) and any reasonably foreseeable misuse thereof.

8.14.2 b)*Addition:*

- 101) Instructions regarding hazards which may be encountered while using the **shredder/chipper**, such as blockage of the blade or feeding in long or multiple branches, and how to avoid them while performing typical tasks;
- 102) Instructions for the operating position and the correct and safe operation of the **shredder/chipper** such as moving, safe positioning, handling, clearing blockages and keeping the **discharge chute** clear of processed material;
- 103) Instruction to make sure that the feed intake is empty before starting the machine;
- 104) Instruction for the operator to keep their face and body away from the **feed intake opening**;
- 105) If a **debris collector** is provided with the **shredder/chipper**, instructions for when and how to attach and detach the **debris collector** to and from the **shredder/chipper**;
- 106) Information about the residual risks that remain despite the inherent safe design measures, safeguarding and complementary protective measures adopted;
- 107) Instructions to stop the machine, and remove plug from the socket, and to make sure that all moving parts have come to a complete stop:
 - after striking a foreign object, and to inspect the machine for damage and make repairs before restarting and operating the machine; or
 - if the machine starts to vibrate abnormally, and then to immediately inspect for damage, replace or repair any damaged parts and to check for and tighten any loose parts;
- 108) Recommendation for the use of a **residual current device** with a tripping current of 30 mA or less;
- 109) Instruction to not tilt the machine whilst the machine is running;
- 110)  Instruction for the operator to wear protective gloves while feeding material into the machine as well as an explanation of the relevant protection category; 

8.14.2 c)*Addition:*

- 101) Recommendations for cleaning and maintenance before storage, including an instruction to empty the **debris collector** before storage;
- 102) Information explaining the consequences of improper maintenance, the use of non-conforming replacement components, or the removal or modification of safety components;
- 103) Instruction to replace worn or damaged components in sets to preserve balance, as applicable;
- 104) Instructions for **shredder/chippers** with multiple blades, to take care as rotating one blade can cause other blades to rotate;
- 105) Instructions for proper adjustment and any necessary **user maintenance** of the **shredder/chipper**, including timescales and a warning of the danger of moving hazardous parts;
- 106) For machines provided with removable covers for **user maintenance**, instruction on how to safely remove and replace covers;

 8.14.2 Za) Replacement:

Emissions:

- 1) The noise emission, measured in accordance with Clause I.2, as follows:
 - A-weighted emission sound pressure level L_{pA} and its uncertainty K_{pA} , where L_{pA} exceeds 70 dB(A).

Where L_{pA} does not exceed 70 dB(A), this fact shall be indicated;

 - A-weighted guaranteed sound power level L_{WA} .
- 2) Recommendation for the operator to wear hearing protection.
- 3) The following information:
 - that the declared noise emission value(s) have been measured in accordance with a standard test method and may be used for comparing one machine with another;
 - that the declared noise emission value(s) may also be used in a preliminary assessment of exposure.
- 4) A warning:
 - that the noise emissions during actual use of the machine can differ from the declared values depending on the ways in which the machine is used especially what kind of workpiece is processed; and
 - of the need to identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the machine is switched off and when it is running idle in addition to the operating time). A11

8.14.3 Replacement:

If information about the mass or weight of the machine is provided, it shall be the mass of the machine in its heaviest configuration in accordance with 8.14.2, including the empty **debris collector**, if any, but excluding optional **attachments**.

Compliance is checked by inspection.

9 Protection against access to live parts

IEC 62841-1:2014, Clause 9, is applicable, except as follows.

9.2 Addition:

For machines that are **class II tools**, access to the surface of **basic insulation** or metal parts separated from **live parts** by **basic insulation** is permitted when the **shredding means** is removed, if the use of a tool is required for its removal.

10 Starting

IEC 62841-1:2014, Clause 10, is applicable.

11 Input and current

IEC 62841-1:2014, Clause 11, is applicable.

12 Heating

IEC 62841-1:2014, Clause 12, is applicable, except as follows.

12.2.1 Replacement:

The load conditions for the heating test of 12.2 are as follows.

*The machine is operated with a torque load by means of a brake adjusted so as to attain **rated input** or **rated current**.*

*Machines marked with a **rated input** or **rated current** followed by the term "(P40)" are operated intermittently until thermal equilibrium is reached or for 30 cycles, whichever is reached first, each cycle comprising a period of operation of 40 s at **rated input** or **rated current** and a period of 60 s with the machine at no load. The temperature is measured at the end of a load period.*

*All other machines are operated continuously at **rated input** or **rated current**. The temperature is measured when the machine has reached thermal equilibrium.*

13 Resistance to heat and fire

IEC 62841-1:2014, Clause 13, is applicable.

14 Moisture resistance

IEC 62841-1:2014, Clause 14, is applicable, except as follows.

14.2.1 Replacement:

The machine is not connected to the supply.

***Detachable parts** are removed and subjected, if necessary, to the relevant treatment with the main part. Movable covers that are non-**detachable parts** and are not self-restoring are placed in the most unfavourable position. Machines fitted with an **appliance inlet**, plug or other connector are tested without the mating connector in place. Air filters are not removed.*

NOTE Examples of self-restoring covers include those that are spring loaded or close by gravity.

14.2.2 Replacement:

Machines other than IPX0 are subjected to tests of IEC 60529:1989 as follows:

- *IPX1 machines are subjected to the test described in IEC 60529:1989, 14.2.1;*
- *IPX2 machines are subjected to the test described in IEC 60529:1989, 14.2.2;*
- *IPX3 machines are subjected to the test described in IEC 60529:1989, 14.2.3 a);*
- *IPX5 machines are subjected to the test described in IEC 60529:1989, 14.2.5. For this test, the water stream is applied from all practicable directions, including the underside of the machine;*
- *IPX6 machines are subjected to the test described in IEC 60529:1989, 14.2.6. For this test, the water stream is applied from all practicable directions, including the underside of the machine;*
- *IPX7 machines are subjected to the test described in IEC 60529:1989, 14.2.7. For this last test, the machine is immersed in water containing approximately 1,0 % NaCl.*

Machines classified as IPX4 are subjected to the test described in IEC 60529:1989, 14.2.4 a), except as follows:

- the test is conducted with a circular horizontal unperforated support having a diameter of twice the oscillating tube radius minus 15 cm. The support is placed at the level of the pivot axis of the oscillating tube. During the test, the support is rotated about its vertical axis at a rate of $(1 \pm 0,1)/\text{min}$; and
- the machine is placed on the unperforated support; and
- the machine is centred with the pivot axis of the oscillating tube at the start of test. The movement of the oscillating tube is limited to 90° either side from the vertical, the time for one complete oscillation ($2 \times 90^\circ$) being (6 ± 1) s; and
- the duration of the test is 10 min.

Alternatively, for machines that do not fit under the oscillating tube in the test described in IEC 60529:1989, 14.2.4 a), machines classified as IPX4 are subjected to the test described in IEC 60529:1989, 14.2.4 b).

Any machines including drainage holes in accordance with 21.102 that are likely to collect processed organic material during **normal use** shall be tested after use for at least 15 min with material in accordance with IEC 62841-1:2014, 8.14.2 b) 4).

Immediately after the appropriate treatment, the machine shall withstand the electric strength test of IEC 62841-1:2014, Annex D, between **live parts** and **accessible parts**. Afterwards, having carefully wiped the external enclosure to remove any surplus water, inspection shall show that there is no trace of water on insulation which could result in a reduction of **creepage distances** and **clearances** below the values specified in 28.1. Water drops on an **appliance inlet**, plug or other connector are not considered.

The machine is then evaluated for

- the risk of fire in accordance with IEC 62841-1:2014, 18.6.1 a); and
- the loss of any **SCF**, unless the machine is rendered into a safe state.

15 Resistance to rusting

IEC 62841-1:2014, Clause 15, is applicable.

16 Overload protection of transformers and associated circuits

IEC 62841-1:2014, Clause 16, is applicable.

17 Endurance

IEC 62841-1:2014, Clause 17, is applicable, except as follows.

17.2 Addition:

For **shredders/chippers**, the test for **transportable tools** is applicable.

18 Abnormal operation

IEC 62841-1:2014, Clause 18, is applicable, except as follows.

18.4 Replacement of the first paragraph:

*Machines incorporating multiphase induction motors are operated, starting from cold, for 30 s with one phase disconnected, and under the torque produced while operated at **rated voltage** or the mean value of the **rated voltage range** with **rated input** or **rated current**.*

18.5 Replacement:

Protection against electric shock shall not be impaired when a **class II tool** (machine) or a **class I tool** (machine) employing a motor of **class II construction** (see IEC 62841-1:2014, 5.10) is subjected to overload conditions according to the type of motor.

For machines with

- *motors having electronically commutated stator windings, compliance is checked by the test of IEC 62841-1:2014, 18.5.4;*
- *series motors that also employ non-metallic filaments or one or more pivotally mounted cutting elements as the **shredding means**, compliance is checked by the test of IEC 62841-1:2014, 18.5.1;*
- *other constructions of motors and **shredding means**, compliance is checked by the test of IEC 62841-1:2014, 18.5.3.*

18.5.2 IEC 62841-1:2014, 18.5.2, is not applicable.

18.8.1 General

Table 4 – Required performance levels

Replacement:

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
Provide desired direction of rotation of the shredding means	Not an SCF
Any electronic control to pass the test of 18.3	a
Prevent exceeding thermal limits as in 18.4 and 18.5.3	a
Provide desired switch-off of the shredding means as in 19.102 4), if applicable	b
Provide desired switch-off of the shredding means in 19.103.1, if any	b
Prevent increase of rotational speed of the shredding means that would cause non-compliance with 19.105	a
Prevent increase of rotational speed of the shredding means that would cause non-compliance with 20.101	a
Prevent self-resetting as required in 23.3	a
Any other speed limiting device	Not an SCF
A11 Restart prevention as required by 21.18.Z101	a A11

19 Mechanical hazards

IEC 62841-1:2014, Clause 19, is applicable, except as follows.

19.1 Addition:

The requirements of 19.1 do not apply to

- the **feed intake opening** or **feed safety opening**, which are covered by 19.101;
- the **debris collector** for **discharge chutes**, if any, which are covered by 19.102; and
- access to the **shredding means**, if any, which is covered by 19.103.

19.3 to 19.6

IEC 62841-1:2014, 19.3 to 19.6, are not applicable.

19.7 Addition:

Debris collectors, if any, shall be empty and attached to the machine in accordance with 8.14.2.

19.8 IEC 62841-1:2014, 19.8, is not applicable.

19.101 Feed intake/safety openings

19.101.1 General

The **feed intake opening(s)** or **feed safety opening(s)** are considered to be **guards**. They shall be **fixed guards** or the construction of the machine shall be such that **normal operation** is not possible without the **guard** in its guarding position.

The **feed intake opening(s)** or **feed safety opening(s)** shall in total fit into a square of 250 mm × 250 mm measured at the plane of the opening(s).

While a **feed safety opening(s)** has to fit into an intake area no more than 250 mm × 250 mm, the **feed intake opening(s)** leading into the **feed safety opening(s)** may be larger provided that the required safety distances are maintained.

To safeguard against contact with the **shredding means** through the **feed intake opening(s)** or **feed safety opening(s)**, the machine shall be constructed

- to meet the dimensional requirements given in 19.101.2 or 19.101.3, or
- such that a straight rod of 1 m length and 12 mm diameter will not pass through the opening to contact the **shredding means** and comply with the tortuous path test of 19.101.4.

Where a **feed intake opening** is divided into two or more **feed safety openings**, the device that creates the division shall be rigid and permanently attached to the **feed intake opening**.

Compliance is checked by inspection and measurement.

19.101.2 Single feed intake/safety openings

Where a **feed safety opening** is a slot, square or round, the opening shall be in accordance with Table 101.

Where a **feed safety opening** is of an irregular shape, the size of opening shall be established by:

a) determining

- the diameter of the smallest round opening; and
- the side of the smallest square opening; and
- the width of the narrowest slot opening

into which the irregular opening can be completely inserted (see ISO 13857:2019, Figure 3); then

b) selecting the corresponding three minimum safety distances according to Table 101. The shortest safety distance of the three values selected according to a) may be used.

The measured dimensions of the safety openings, as defined in 19.101.2, and safety distances shall comply with Table 101.

Compliance is checked by measurement.

Table 101 – Safety distances of shredding means to feed intake openings

Feed safety opening W mm	Distance – Feed intake opening to shredding means D mm		
	Slot	Square	Round
$W \leq 30$	$D \geq 200$	$D \geq 200$	$D \geq 200^d$
$30 < W \leq 50$	$D \geq 850^{a \text{ or } b}$	$D \geq 200$	$D \geq 200^d$
$50 < W \leq 250$	$D \geq 850^{b \text{ or } c}$	$D \geq 850^{b \text{ or } c}$	$D \geq 850^{b \text{ or } c}$

^a D is reduced to ≥ 200 mm if the longest side of the slot is ≤ 50 mm.

^b i) Where the height h is $< 1\,200$ mm and $\alpha \leq 40^\circ$, D shall be 850 mm measured as the shortest distance to the **shredding means** (see Figure 102 a) and Figure 102 b)). Additionally, where W is greater than 120 mm, the intake area shall be restricted to no more than 250 mm $\times$ 250 mm at a distance of at least 850 mm measured as the shortest distance to the **shredding means**.

ii) Where the height h is $< 1\,200$ mm and $90^\circ \geq \alpha > 40^\circ$, D shall be measured as the shortest distance from the outer edge of the **feed intake opening** to the **shredding means** subject to the following conditions (see Figure 102 c)):

- Where W is greater than 120 mm, the intake area shall be restricted to no more than 250 mm $\times$ 250 mm at a distance of at least 850 mm measured as the shortest distance to the **shredding means**;
- $D \geq 550 + 150 (2 + \sin (\alpha - 40^\circ))$ mm; and
- $L \geq 550$ mm.

^c i) Where the height h is $\geq 1\,200$ mm, and $\alpha \leq 40^\circ$, D shall be measured as a chain measurement, subject to the following two conditions (see Figure 102 d), Figure 102 e) and Figure 102 f)):

- $d_1 + d_2 \dots + d_n \geq [850 - \frac{1}{2} (h - 1\,200)]$ mm; and
- $L \geq 550$ mm.

ii) Where the height h is $\geq 1\,200$ mm and $90^\circ \geq \alpha > 40^\circ$, D shall be measured as a chain measurement, subject to the following two conditions (see Figure 102 g) and Figure 102 h)):

- $d_1 + d_2 \dots + d_n \geq [550 + 150 (2 + \sin (\alpha - 40^\circ))] - \frac{1}{2} (h - 1\,200)$ mm; and
- $L \geq 550$ mm.

^d Where a round opening of ≤ 40 mm is used without combination or overlap with any other shape, D shall be ≥ 120 mm.

