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Powered hand-held hedge trimmers — Safety

Taille-haies portatifs à moteur — Sécurité

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 23, T*ractors and machinery for agriculture and forestry*, Subcommittee SC 13, *Powered lawn and garden equipment*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

This third edition cancels and replaces the second edition (ISO 10517:2009), which has been technically revised. It also incorporates the Amendment ISO 10517:2009/Amd 1:2013. The main changes compared to the previous edition are as follows:

— the noise measurement procedure has been removed from the body of the document and has been replaced with the reference to ISO 22868;

— the vibration measurement procedure has been removed from the body of the document and has been replaced with the reference to ISO 22867;

— handle strength requirement has been added;

— extended-reach hedge trimmers have been better implemented in the body of the document;

— a test for the labels has been added;

— several text changes have been made for better understanding.

Introduction

This document is a type-C standard as stated in ISO 12100.

This document is of relevance, in particular, for the following stakeholder groups representing the market players with regard to machinery safety:

— machine manufacturers (small, medium and large enterprises);

— health and safety bodies (regulators, accident prevention organisations, market surveillance, etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

— machine users/employers (small, medium and large enterprises);

— machine users/employees (e.g. trade unions, organizations for people with special needs);

— service providers, e.g. for maintenance (small, medium and large enterprises);

— consumers (in case of machinery intended for use by consumers).

The above-mentioned stakeholder groups have been given the possibility to participate in the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the scope of this document.

When requirements of this type-C standard are different from those which are stated in the type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

Powered hand-held hedge trimmers — Safety

1 Scope

This document specifies safety requirements and measures for the verification of the design and construction of hand-held, integrally-driven combustion engine hedge trimmers (hereafter referred to as "hedge trimmers") designed to be used by a single operator for trimming hedges and bushes while utilizing one or more linear reciprocating cutter blades.

This document is also applicable to "split-boom" type hedge trimmers and to multi-purpose machines when configured as a hedge trimmer.

It establishes methods for the elimination or reduction of hazards arising from the use of the hedge trimmers. In addition, it specifies the type of information to be provided by the manufacturer on safe working practices.

This document deals with all significant hazards, hazardous situations and events relevant to powered hand-held hedge trimmers when they are used as intended and under the conditions of misuse that are reasonably foreseeable by the manufacturer (see Clause 4).

This document is not applicable to hedge trimmers with an engine displacement over 80 cm^3, nor is it applicable to hedge trimmers manufactured before the date of its publication.

2 Normative references

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.

ISO 3767-1, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 1: Common symbols*

ISO 3767-3, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 3: Symbols for powered lawn and garden equipment*

ISO 3767-4, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 4: Symbols for forestry machinery*

ISO 3864-2, *Graphical symbols — Safety colours and safety signs — Part 2: Design principles for product safety labels*

ISO 7010, *Graphical symbols — Safety colours and safety signs — Registered safety signs*

ISO 11684, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Safety signs and hazard pictorials — General principles*

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 13857:2008, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

ISO 22867, *Forestry and gardening machinery — Vibration test code for portable hand-held machines with internal combustion engine — Vibration at the handles*

ISO 22868, *Forestry and gardening machinery — Noise test code for portable hand-held machines with internal combustion engine — Engineering method (Grade 2 accuracy)*

IEC 61032:1997, *Protection of person and equipment by enclosures — Probes for verification*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
hedge trimmer
machine fitted with reciprocating blades made of metal, intended to cut and form hedges, bushes and similar vegetation

3.2
cutting device
part of the assembly consisting of cutter blade and shear plate, or of the cutter blades together with any supporting part, which performs the cutting action and that can be single- or double-sided

Note 1 to entry: See Figure 2.

3.3
cutter blade
part of the cutting device having blade teeth which cut by a shearing action either against other blade teeth or against a shear plate

Note 1 to entry: See Figure 2.

3.4
blade tooth
part of the cutter blade which is sharpened to perform the shearing action

Note 1 to entry: See Figure 2.

3.5
cutting length
effective cutting length of the cutting device measured from the inside edge of the first blade tooth or shear plate tooth to the inside edge of the last blade tooth or shear plate tooth

Note 1 to entry: See Figure 3.

Note 2 to entry: Where both blades move, the measurements are taken when the first and last teeth are furthest apart.

3.6
front handle
handle located at or towards the cutting device

Note 1 to entry: See Figure 1.

3.7
rear handle
handle located furthest from the cutting device

Note 1 to entry: See Figure 1.

3.8
throttle lock
device for temporarily setting the throttle in a partially open position to aid starting

3.9
throttle control lock-out
device which prevents the unintentional activation of the throttle trigger unless the operator releases it

3.10
throttle control
blade control
device activated by the operator's hand or finger for controlling the cutter blade movement

Note 1 to entry: This can require a single or a two-stage operation depending on the application.

3.11
blunt extension
extending blunt part of the cutting device or an extending part of an unsharpened plate fitted to the cutting device to prevent contact with the moving cutter blade

3.12
adjustable handle
handle whose position can be modified either by movement or by rotation

3.13
drive shaft
shaft used to transmit power from the engine to the cutting device

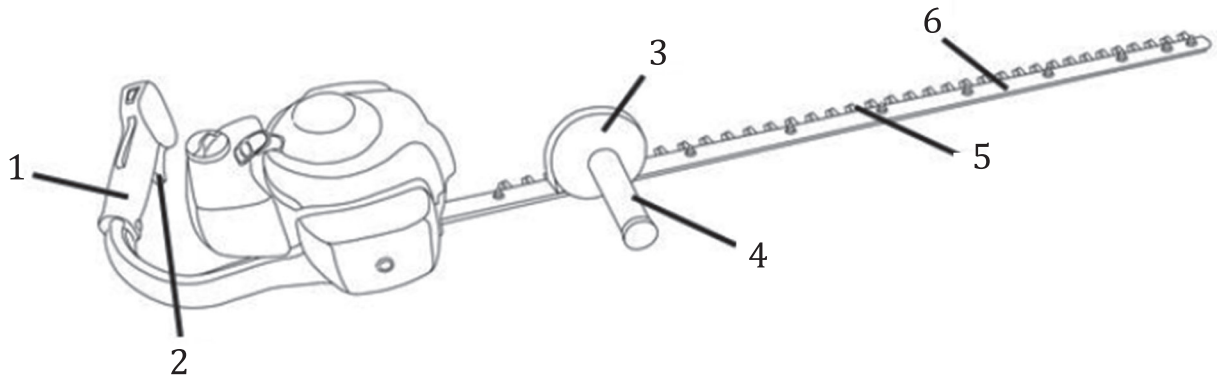
3.14
drive shaft tube
tube which contains the drive shaft and connects the engine to the cutting device

Note 1 to entry: It can be fixed, extendable or telescoping in length. For ease of storage and transportation, the drive shaft tube can be detachable.

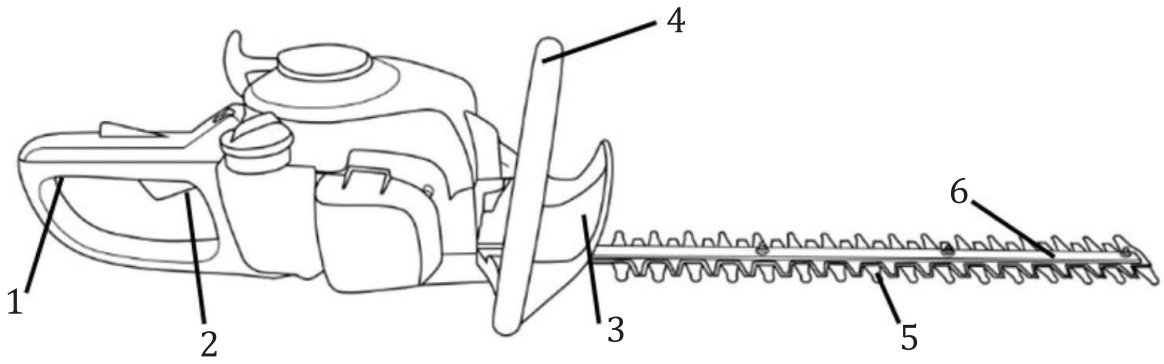
3.15
split-boom
design feature which permits the separation of the drive shaft tube for ease of storage and transportation

3.16
dry weight
weight of the unit with empty fuel/oil tank(s) and without cutting device cover

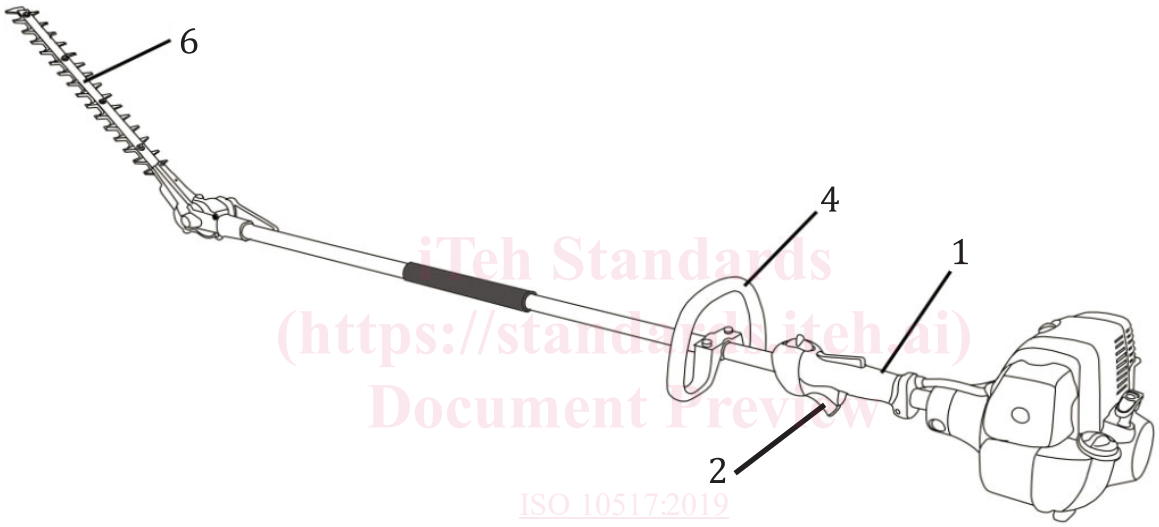
Dimensions in millimetres



a) Single-sided hedge trimmer



b) Double-sided hedge trimmer

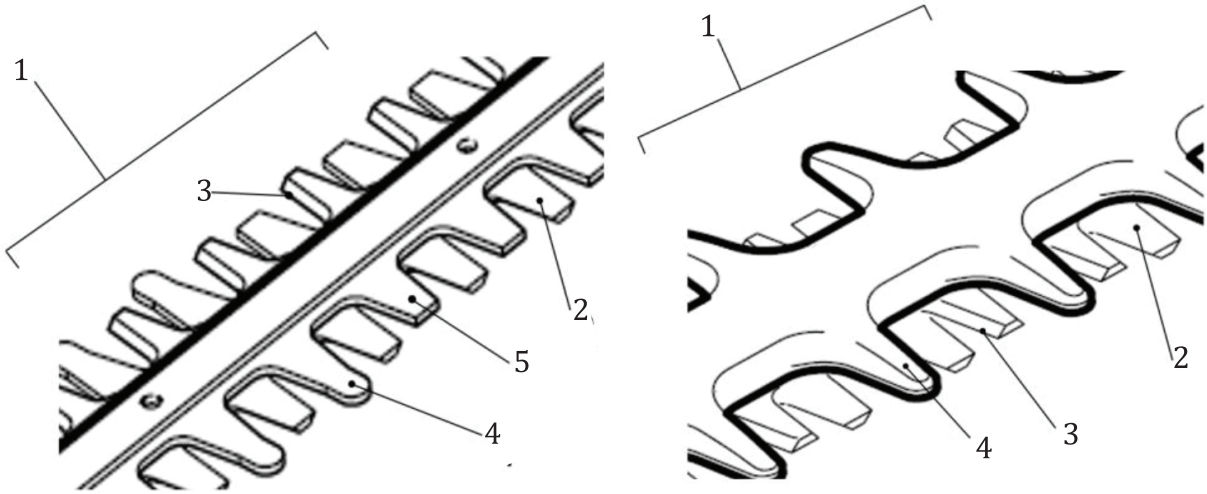


c) Extended-reach hedge trimmer

Key

1 rear handle
2 throttle control
3 front hand barrier
4 front handle
5 cutter blade
6 cutting device

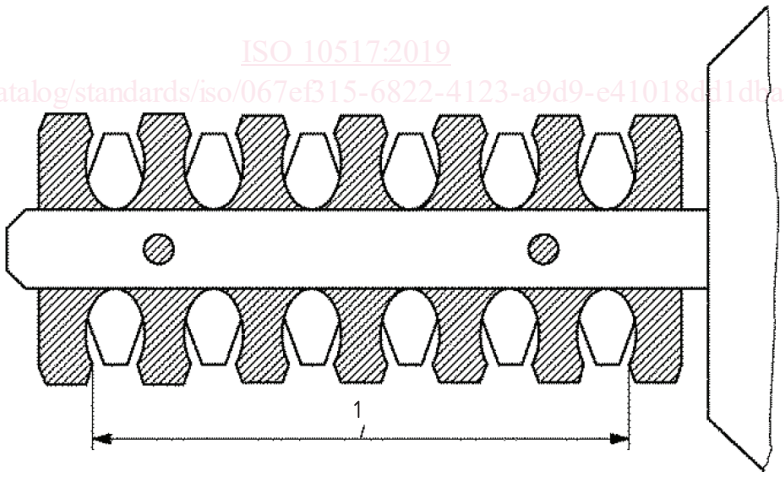
Figure 1 — Examples of types of hedge trimmers



Key

1 cutting device
2 cutter blade
3 blade tooth
4 blunt extension
5 unsharpened plate

Figure 2 — Cutting device



Key

1 cutting length

Figure 3 — Cutting length

4 List of significant hazards

For defined danger zones, this clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this document. They are identified by risk assessment as significant for these types of hedge trimmer and which require specific action by the designer or

manufacturer to eliminate or to reduce the risk (see Table 1). It is the responsibility of the manufacturer to check whether or not the safety requirements given by this document apply to each significant hazard presented by the specific hedge trimmer and to confirm that the risk assessment is complete with particular attention to

— the intended use of the hedge trimmer including maintenance, setting and cleaning and its foreseeable misuse, and

— identification of all significant hazards associated with the hedge trimmer.

Table 1 — Significant hazards associated with powered hand-held hedge trimmers

Hazard		Location or event	Clause/subclause of this document
1	**Mechanical hazards due to:**		
	a) shape	Holding and operating the hedge trimmer	5.2.1
	b) relative locations	Safe positioning in use	6.1; Annex A
1.2	Shearing hazard	Clearing processed material from cutting device	5.2.2, 5.2.4, 5.2.7, 6.1; Annex A
1.3	Cutting or severing hazard	Inadvertent contact with cutting device	5.2.2, 5.2.4, 5.2.6, 5.2.7,, 6.1; Annex A
1.4	Entanglement hazard	Loose clothing entering cutting device	6.1; Annex A
1.10	Ejection of parts (of machinery and processed materials/workpieces)	Processed material ejected from cutting device	6.1; Annex A
2	**Electrical hazards due to:**		
2.1	Contact of persons with live parts (direct or indirect)	High voltage and ignition parts Damage to cables due to oil, fuel and abrasion	5.9.1, 5.9.2, 5.9.3
3	**Thermal hazards, resulting in**		
3.1	Burns, scalds and other injuries, by possible contact of persons with objects or materials with an extremely high or low temperature, by flames or explosions and also by the radiation of heat sources	Contact with hot parts	5.6
4	**Hazards generated by noise, resulting in**		
4.1	Hearing loss (deafness), other physiological disorders (e.g. loss of balance, loss of awareness)	Hearing damage due to hedge trimmer and/or processing of material	5.11, 6.1, 6.2; Annex A
5	**Hazards generated by vibration** (resulting in a variety of neurological and vascular disorders)	Hand/arm damage due to hedge trimmer and/or processing of material	5.10, 6.1, 6.2; Annex A
7	**Hazards generated by materials and substances** processed, used or exhausted by machinery, including:		
7.1	Hazards resulting from contact with or inhalation of harmful fluids, gases, mists, fumes and dusts	Breathing in of engine exhaust fumes	5.8, 6.1; Annex A
7.2	Fire or explosion hazard	Refuelling	5.7, 6.1; Annex A
8	**Hazards generated by neglecting ergonomic principles in hedge trimmer design** (mismatch of machinery with human characteristics and abilities) caused, for example, by:		
8.1	Unhealthy postures or excessive efforts	Handling during use	6.1; Annex A
8.3	Neglected use of personal protection equipment	Protect against noise and vibration, vision	5.10, 5.11, 6.1, 6.2; Annex A

