SLOVENSKI STANDARD
oSIST prEN ISO 11680:2024

01-julij-2024

Gozdarski stroji - Zahteve za varnost in preskušanje prenosnih motornih žag za obvejevanje z drogom (ISO/DIS 11680:2024)

Machinery for forestry - Safety requirements and testing for portable pole mounted powered pruners (ISO/DIS 11680:2024)

Forstmaschinen - Sicherheitstechnische Anforderungen und Prüfung für motorbetriebene Hochentaster (ISO/DIS 11680:2024)

Matériel forestier - Exigences de sécurité et essais pour les perches élagueuses à moteur (ISO/DIS 11680:2024)

Ta slovenski standard je istoveten z: **prEN ISO 11680**

ICS:

65.060.80	Gozdarska oprema	Forestry equipment

oSIST prEN ISO 11680:2024 **en,fr,de**

DRAFT International Standard

ISO/DIS 11680

Machinery for forestry — Safety requirements and testing for portable pole mounted powered pruners

Matériel forestier — Exigences de sécurité et essais pour les perches élagueuses à moteur

ICS: 65.060.80

ISO/TC **23**/SC **17**

Secretariat: **SIS**

Voting begins on:
2024-05-02

Voting terminates on:
2024-07-25

Reference number
ISO/DIS 11680:2024(en)

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Published in Switzerland

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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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 17, *Manually portable (hand-held) powered lawn and garden equipment and forest machinery*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 144, *Tractors and machinery for agriculture and forestry,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition cancels and replaces ISO 11680-1:2021 (machines fitted with integral combustion engines) and 11680-2:2021 (machines for use with backpack power source), for which the requirements have been combined here into a single *Machinery for forestry — Safety requirements and testing for pole mounted powered pruners* standard. Additionally, the following new requirements and revisions have been made (not an all-inclusive list of changes):

— Definitions – Add definition for “hand grip”. Revise definition for “dry weight”. Remove definitions for “guide bar” and “saw chain”;

— Revise handle minimal gripping length requirements (from 65 mm to 63 mm) to harminzie with IEC standards. Add 25 mm dimensional requirement around the gripping length. (Clause 4.3.1);

— Added new requirement for cutting attachment strength test set-up for machines with a backpack (clause 4.5.3, Figure 6);

— Clarified the distance to cutting attachements measurements (clause 4.7.1, Figure 7);

— Added maximum throttle linkage actuation test force (“200 N") (clause 4.10.2.2);

— Clarified the minimum number of tests (“at least one”) and determination of test directions (“good engineering judgement”) for fuel feed lines strength and accessibility testings.

— Clarifed the 200 mm of the test probe is the free length after mounting. (Annex B).

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.

Introduction

This document is a type-C standard as stated in ISO 12100:2010.

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 at 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 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.

Machinery for forestry — Safety requirements and testing for portable pole mounted powered pruners

1 Scope

This document specifies safety requirements and measures for their verification for the design and construction of portable pole-mounted powered pruners with internal combustion engine power sources (hereafter named “machine”), including extendable and telescopic machines. These machines use a power transmission shaft to transmit power to a cutting attachment consisting of a saw-chain and guide bar, a reciprocating saw blade or a single-piece circular saw blade with a 205 mm maximum outside diameter.

This document deals with significant hazards relevant to these machines when they are used as intended. This document does not address electrical shock from contact with overhead electric lines apart from warnings and instruction manual requirements, or whole-body vibration from back power units. See Annex A for a list of significant hazards.

This document is applicable to machines manufactured after its date of publication.

Brush cutters with a circular saw blade are not included in the scope of this document.

NOTE Brush cutter requirements are outlined in ISO 11806 series.

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 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components*

ISO 4414:2010, *Pneumatic fluid power — General rules and safety requirements for systems and their components*

ISO 6531:2017, *Machinery for forestry — Portable chain-saws — Vocabulary*

ISO 7113:1999, *Portable hand-held forestry machines — Cutting attachments for brush cutters — Single-piece metal blades*

ISO 7112:2018, *Machinery for forestry — Portable brush-cutters and grass-trimmers — Vocabulary*

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

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

ISO 14982:1998, *Agricultural and forestry machinery — Electromagnetic compatibility — Test methods and acceptance criteria*

ISO 22867:2021, *Forestry and gardening machinery — Vibration test code for portable hand-held machines with internal combustion engine — Vibration at the handles*

ISO 22868:2021, *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 persons and equipment by enclosures — Probes for verification*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100 and the following apply.

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

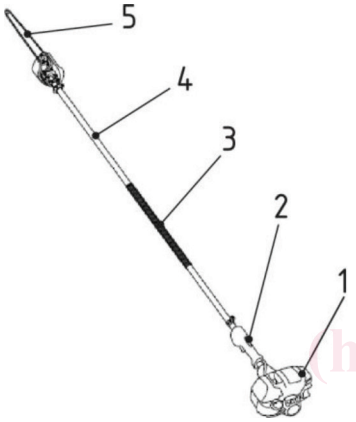
— ISO Online browsing platform: available at https://www.iso.org/obp

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

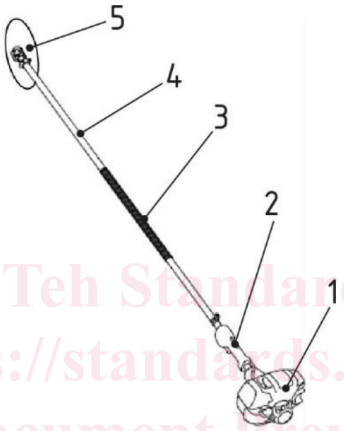
3.1
portable pole-mounted powered pruner (machine)
machine designed to enable an operator to cut branches of standing trees from a distance and that is supported and controlled by the operator

3.1.1
pole-mounted powered pruner with a hand-held power unit
machine whose power source is connected via a rigid shaft tube (pole) to a cutting attachment

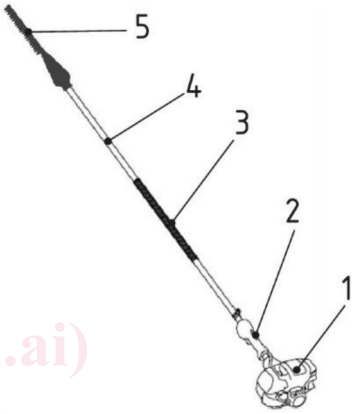
Note 1 to entry: See Figure 1 for examples of pole-mounted powered pruners with a hand-held power unit.



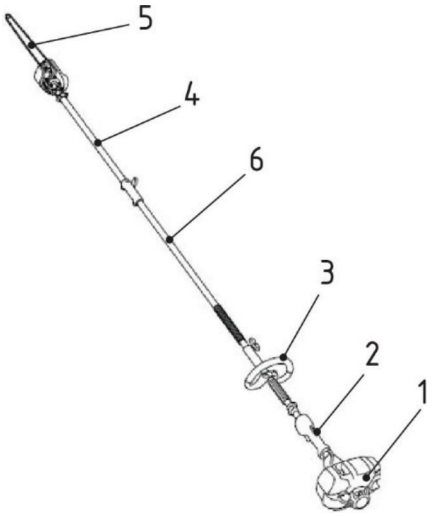
a) Machine with saw-chain cutting attachment



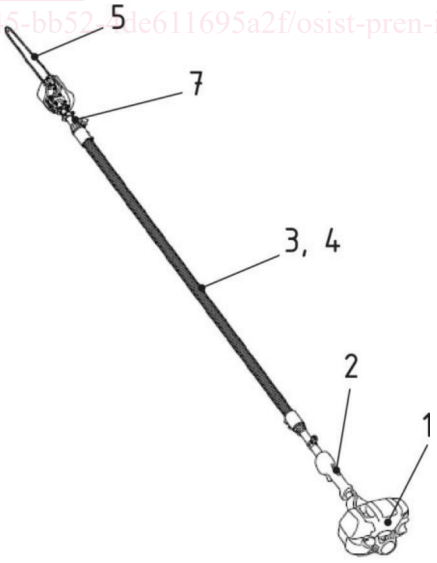
b) Machine with circular saw blade cutting attachment



c) Machine with reciprocating saw blade cutting attachment



d) Extendable machine



e) Telescopic machine

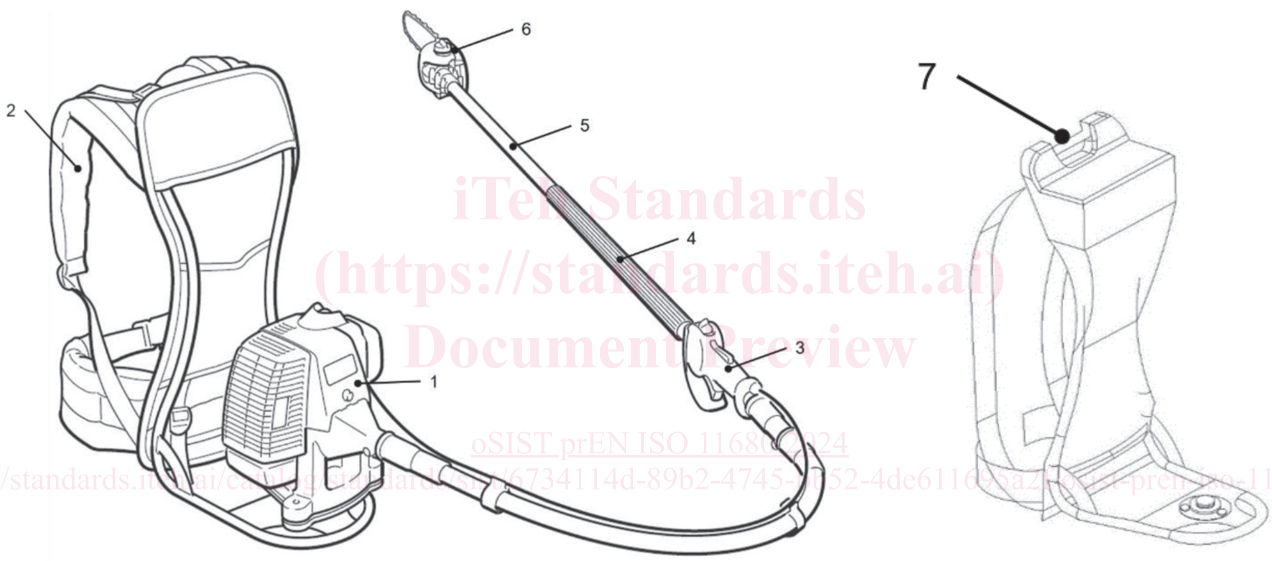
Key

1 power unit
2 rear handle
3 front handle
4 shaft tube / power transmission shaft
5 cutting attachment
6 extension
7 telescopic shaft tube

Figure 1 — Examples of pole-mounted powered pruners with a hand-held power unit

3.1.2
pole-mounted powered pruner with a backpack power unit
machine whose power source is mounted to a backpack unit and connected via flexible shaft tube (pole) to a cutting attachment

Note 1 to entry: See Figure 2 for example of pole-mounted powered pruner with backpack power unit. Machines with backpack power units may also be configured with the cutting attachments shown in Figure 1b (circular saw blade) and 1c (reciprocating saw blade).



Key

1 backpack power unit
2 harness for backpack power unit
3 rear handle
4 front handle
5 shaft tube/power transmission shaft
6 cutting attachment
7 hand grip

Figure 2 — Example of pole-mounted powered pruner with backpack power unit (shown with saw-chain cutting attachment)

3.2
backpack power unit
power source which is designed to be carried on the operator’s body by means of a supporting device

3.3
choke
device for enriching the fuel/air mixture in the carburettor to aid starting

3.4
clutch
device for connecting and disconnecting a driven member to and from a rotating source of power

3.5
cutting attachment
combination of a saw-chain and guide bar, a reciprocating saw blade or a single-piece circular saw blade, used to cut branches from a standing tree

3.6
dry weight
total machine weight without fuel, cutting attachment, and harness (if required in accordance with this standard)

3.7
extendable
able to extend operational length of the machine by adding shaft extensions

3.8
hand-held power unit
power source which is carried, supported and controlled with the operator's hands

Note 1 to entry: A harness can aid in providing support.

3.9
handle
support device fitted to the machine to enable the operator to hold and manipulate the machine

3.10
harness
adjustable equipment by which the machine is suspended from the operator

3.11
hand grip
surface of structure specifically designed for the operator's hand to grasp to enable manoeuvring of a backpack power unit

3.12
idling speed
engine speed at which the saw-chain does not move

Note 1 to entry: A range of idling speeds is identified by the manufacturer and stated in the instructions.

3.13
power transmission shaft
shaft inside the shaft tube for transmitting power from the engine to the angle transmission or cutting attachment

3.14
quick-release mechanism
device enabling the operator to free themselves quickly from the machine in case of emergency

3.15
racing speed
maximum engine speed achieved at full open throttle or the engine speed at 133 % of the maximum power speed, whichever is lesser

3.16
shaft tube
part of the machine that provides a casing for the power transmission shaft