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Snow throwers — Safety requirements and test procedures —

Part 3: Ride-on snow throwers

Chasse-neige — Exigences de sécurité et essais —

Partie 3: Chasse-neige à conducteur porté

Reference number
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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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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, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 13, *powered lawn and garden equipment*.

This first edition of ISO 8437-3, together with ISO 8437-1, ISO 8437-2 and ISO 8437-4, cancels and replaces ISO 8437:1989, which has been technically revised. It also incorporates the Amendment ISO 8437:1989/Amd.1:1997.

A list of all parts in the ISO 8437 series can be found on the ISO website.

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

The structure of safety standards in the field of machinery is as follows.

a) Type-A standards (basic standards) give basic concepts, principles for design and general aspects that can be applied to machinery.

b) Type-B standards (generic safety standards) deal with one or more safety aspects or safeguards that can be used across a wide range of machinery:

   1) type-B1 standards on particular safety aspects (e.g. safety distances, surface temperature, noise);

   2) type-B2 standards on safeguards (e.g. two-handed controls, interlocking devices, pressure sensitive devices, guards).

c) Type-C standards (machinery safety standards) deal with detailed safety requirements for a particular machine or group of machines.

ISO 8437 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 organizations, 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 provisions of this type-C standard are different from those which are stated in type-A or type-B standards, the provisions of this type-C standard shall take precedence over the provisions of the other standards for machines that have been designed and built according to the provisions of this type-C standard.

Snow throwers — Safety requirements and test procedures —

Part 3: Ride-on snow throwers

1 Scope

This document specifies safety requirements applicable to combustion engine powered ride-on snow throwers. It is intended to be used with ISO 8437-1 and ISO 8437-4 to achieve the full requirements and means for ride-on snow throwers.

The ISO 8437 series deals with significant hazards, hazardous situations and events relevant to snow throwers used as intended and under the conditions reasonably foreseeable by the manufacturer.

It does not apply to the following:

— electrically powered and battery powered snow throwers;

— hand-held snow throwers;

— airport or highway snow removal machines and equipment;

— machines intended for use in potentially explosive atmospheres.

It does not deal with hazards related to the following:

— battery circuits exceeding 42 V;

— mains connected starting motor;

— magneto grounding circuits;

— working environment;

— electromagnetic compatibility.

The ISO 8437 series is not applicable to machines that were 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 3411, *Earth-moving machinery — Physical dimensions of operators and minimum operator space envelope*

ISO 5395-3, *Garden equipment — Safety requirements for combustion-engine-powered lawnmowers — Part 3: Ride-on lawnmowers with seated operator*

ISO 8437-1:2019, *Snow throwers — Safety requirements and test procedures — Part 1: Terminology and common tests*

ISO 8437-4:2019, *Snow throwers — Safety requirements and test procedures — Part 4: Information on national and regional provisions*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions in ISO 8437-1 and ISO 12100 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/

4 Snow thrower safety requirements and test procedures

4.1 General

The machines shall comply with the safety requirements and/or protective measures of this clause. In addition, the machine shall be designed in accordance with the principles of ISO 12100 for hazards relevant but not significant that are not dealt with by this document (e.g. sharp edges on the outside of the machine).

A slip-resistant surface or other means shall be provided to minimize the possibility of an operator's foot slipping off the foot supports or platforms.

Machines with a snow thrower shall be equipped with two red-colour reflex reflectors. They shall face rearward and be mounted a minimum of 305 mm above the ground. A red tail light, visible at 91,4 m, may be substituted for reflectors. Reflectors or tail lights shall be provided with the snow thrower attachments if the propelling machine is not equipped with reflectors or tail lights.

For additional regional and national requirements, see ISO 8437-4:2019, Clause 6.

4.2 Controls

4.2.1 General

Operator controls shall be located within, and have a range of movement which remains within, the operator control position given in Figure 1, except for

— engine controls,

— snow discharge chute and deflector control(s),

— manual lift,

— hydrostatic bypass valve, and

— parking brake.

Compliance shall be checked by inspection and measurement.

The controls shall be designed such that they can be operated by an operator with and without arctic mittens see Figure 2.

Compliance shall be checked by functional test.

No controls shall be in any hazard zone (see Figure 1).

Compliance shall be checked by inspection and functional test.

Pedals shall have a slip-resistant surface or other means of minimizing the possibility of the operator's foot slipping off the pedals.

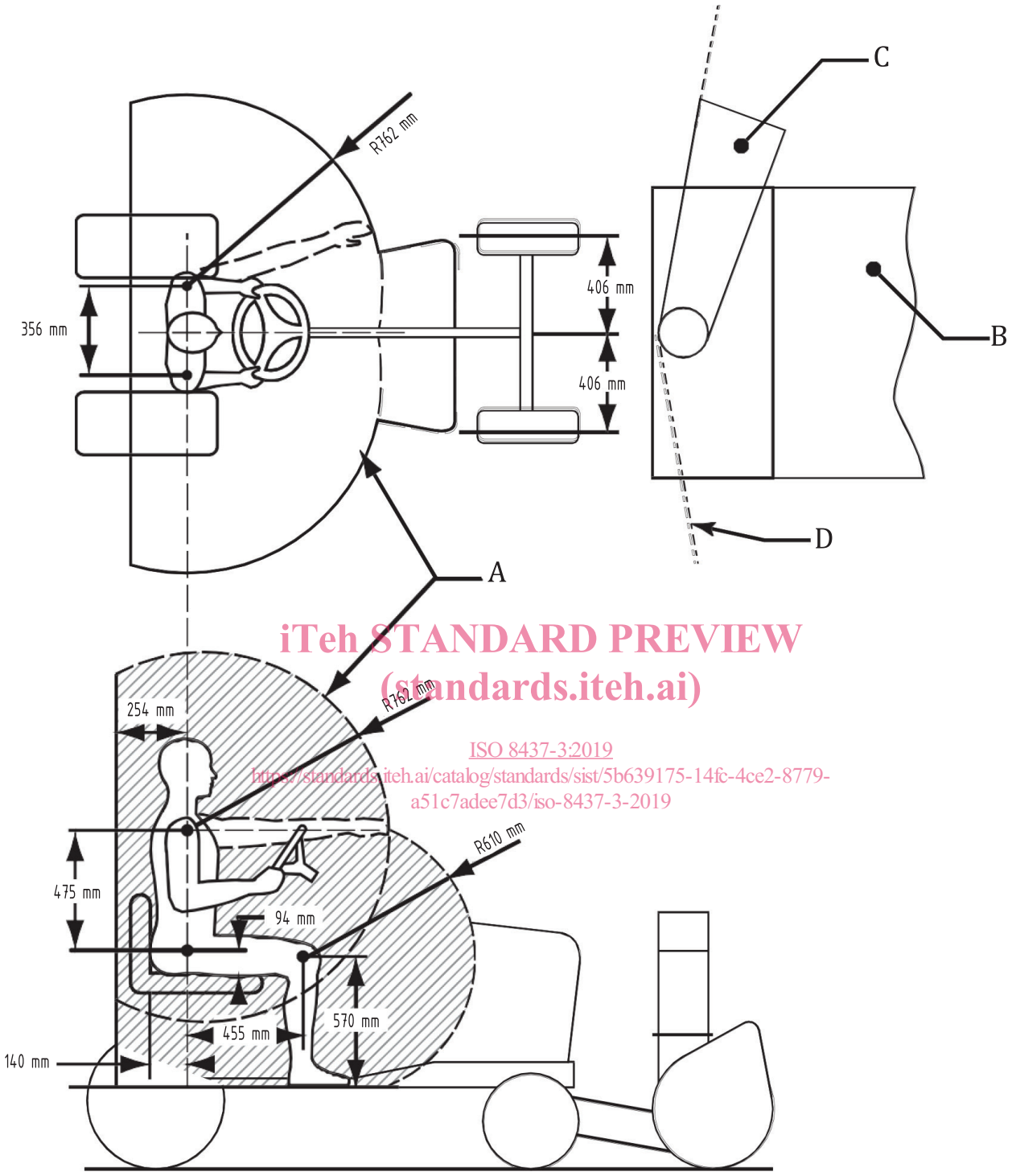
Compliance shall be checked by inspection and functional test.

Controls where the purpose is not obvious to the user shall have the function, direction and/or method of operation clearly identified by a durable label or mark except for the steering wheel, manual lift controls, and snow discharge chute and deflector controls, which are optional.

Compliance shall be checked by inspection and labels shall be tested in accordance with ISO 8437-1:2019, 5.3.

Detailed instructions on the operation of all controls shall be provided in an instruction handbook (see Annex A).

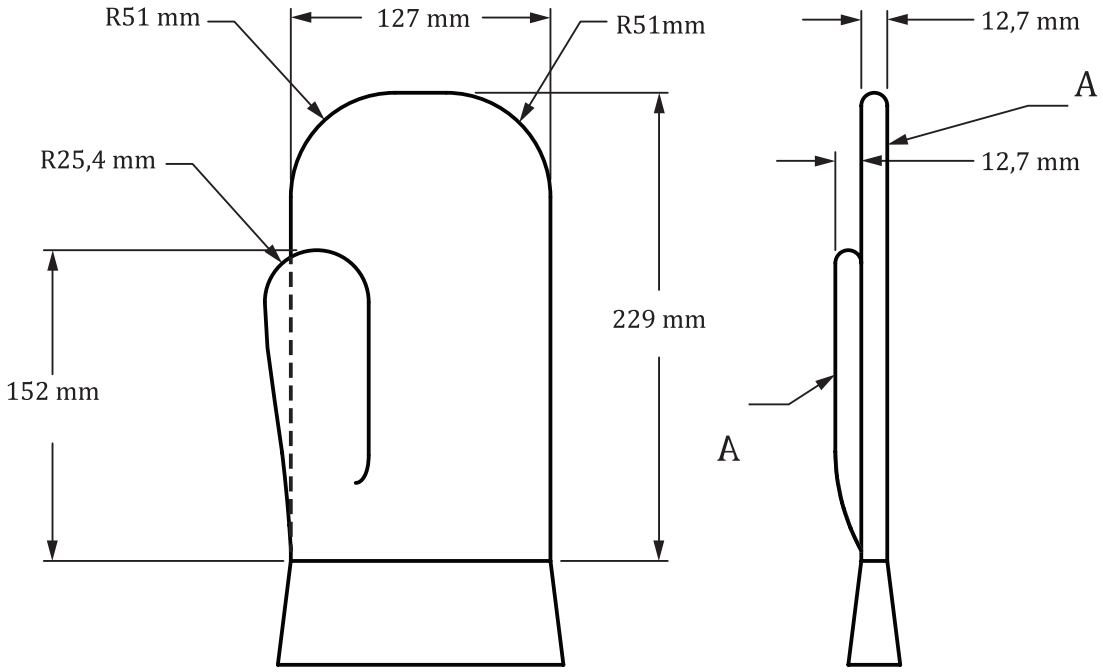
Compliance shall be checked by inspection.



Key

A operator position
B collector hazard zone
C discharge hazard zone
D discharge limit

Figure 1 — Operator position and hazard zones: ride-on snow throwers



Key

A pressed flat

NOTE 1 All dimensions approximate, without hand in glove.

NOTE 2 Material: buckskin outer shell with knit liner.

Figure 2 — Arctic mitten

4.2.2 Engine stopping and starting

4.2.2.1 Starting device

A switch operated by a removable key, or a similar device, shall be provided to prevent unauthorized starting of the engine unless a manual starter (such as an integral starter rope) is the only means of starting the engine. Any engine starting device shall require intentional activation in order to start the engine. Snow throwers shall not be provided with a starter operated by means of a loose rope.

Compliance shall be checked by inspection and functional test.

4.2.2.2 Stopping device

An engine stopping device shall be provided. The device shall not depend on sustained manual pressure for its continued operation. An emergency stop device is not required.

Compliance shall be checked by inspection and functional test.

4.2.2.3 Hand-operated

The direction of motion for a handle-mounted engine speed hand-lever control shall be

a) generally forward or upward, or both, to increase speed, and

b) generally rearward or downward, or both, to decrease speed.

Compliance shall be checked by inspection and functional test.

4.2.2.4 Foot-operated

When a foot-operated engine speed control pedal is provided, it shall be operated by the right foot with the direction of motion generally forward or downward, or both, to increase speed. It shall be located within the operator control position.

Compliance shall be checked by inspection and functional test.

4.2.2.5 Drive interlock for starting

A means shall be provided to prevent starting of the engine unless

a) the collector and impeller drive are disengaged, and

b) the traction drive is disengaged or in a neutral position.

Compliance shall be checked by inspection and functional test.

4.2.2.6 Engine speed

For regional and national requirements on engine speed, see ISO 8437-4:2019, Clause 6.

4.2.3 Collector and impeller control

4.2.3.1 Operator-presence control

A means shall be provided to automatically stop the impeller and/or collector or kill the engine when the operator leaves the operator position. The collector and/or impeller may resume operation upon reactivation of the operator-presence control, provided the collector and impeller did not stop. Additional requirements are given at 4.2.8.

Compliance shall be checked by inspection and functional test.

4.2.3.2 Stopping time

The impeller and/or collector shall stop within 5 s, and comply with 4.2.3.4 when the control is disengaged.

The engine shall be set at the equipment manufacturer's maximum specified speed. The control shall be fixed to maintain the maximum speed.

Compliance shall be checked by inspection, measurement, and test in accordance with 4.2.3.4.

4.2.3.3 Impeller or traction engagement control

A means shall be provided to permit the machine to be transported under its own power without the impeller engaged. A means shall also be provided to permit engagement of the impeller without engagement of the traction drive.

Compliance shall be checked by inspection and functional test.

4.2.3.4 Impeller controls tests

4.2.3.4.1 Test procedure

Stopping time shall be measured from the initiation of a stop command from the maximum speed achievable by means of the operator's engine speed control.

