SLOVENSKI STANDARD
oSIST prEN ISO 28139:2017

01-julij-2017

Oprema za zaščito poljščin - Nahrbtna škropilnica na zračni tlak s pogonskim motorjem - Varnostne in okoljske zahteve in preskusne metode (ISO/DIS 28139:2017)

Equipment for crop protection - Knapsack combustion engine-driven air-blast sprayers - Safety and environmental requirements and test methods (ISO/DIS 28139:2017)

Knapsack combustion engine driven mistblowers

Matériel de protection des cultures - Atomiseurs à dos à moteur - Exigences de sécurité et environnementales (ISO/DIS 28139:2017)

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Equipment for crop protection — Knapsack combustion engine-driven air-blast sprayers — Safety and environmental requirements and test methods

Matériel de protection des cultures — Atomiseurs à dos à moteur — Exigences de sécurité et environnementales

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 28139 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 6, *Equipment for crop protection*.

This second edition of ISO 28139 cancels and replaces ISO 28139:2009 and ISO 10988:2011 *Equipment for crop protection -- Knapsack motorized air-assisted sprayers -- Test methods and performance limits*, which has been technically revised

Equipment for crop protection — Knapsack combustion engine-driven air-blast sprayers — Safety and environmental requirements and test methods

1 Scope

This International Standard specifies safety requirements and their verification, environmental requirements and related test methods and minimum performance limits, for the design and construction of knapsack combustion engine-driven air-blast sprayers as defined in ISO 5681.

NOTE 1 ISO 5681 is currently under revision.

NOTE 2 An example of this machine is given in Annex D.

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

It addresses general operating parameters as well as the potential deposition of spray droplets under specified controlled conditions.

This International Standard deals with all significant hazards, hazardous situations and events, excepting those arising from vibration transmitted at the back of operator.

It is applicable to knapsack combustion engine-driven air-blast sprayers when they are used as intended and under the conditions foreseen by the manufacturer (see Table A.1).

It is not applicable to:

— hydraulic pressure sprayers,

— thermal sprayers,

— cold foggers,

— sprayers adapted for the application of dry material.

It is not applicable to knapsack combustion engine-driven air-blast sprayers manufactured before the date of its publication.

2 Normative references

The following referenced documents are indispensable for the application 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 and IEC maintain terminological databases for use in standardization at the following addresses:

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

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

ISO 3767-5, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Symbols for operator controls and other displays — Part 5: Symbols for manual portable forestry machines*

ISO 3864-1, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

ISO 5681, *Equipment for crop protection — Vocabulary*

ISO 5682-1, *Equipment for crop protection — Spraying equipment — Part 1: Test methods for sprayer nozzles*

ISO 8893, *Forestry machinery — Portable brush-cutters and grass-trimmers — Engine performance and fuel consumption*

ISO 9357:1990, *Equipment for crop protection — Agricultural sprayers — Tank nominal volume and filling hole diameter*

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

ISO 19732, *Equipment for crop protection — Sprayer filters — Colour coding for identification*

ISO 19932-1:2013, *Equipment for crop protection — Knapsack sprayers — Part 1: Safety and environmental requirements*

ISO 19932-2:2013, *Equipment for crop protection — Knapsack sprayers — Part 2: Test methods*

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)*

ISO/TR 11688-1, *Acoustics — Recommended practice for the design of low-noise machinery and equipment — Part 1: Planning*

IEC 60745-1:2006, *Hand-held motor-operated electric tools — Safety — Part 1: General requirements*

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, ISO 5681, ISO 19932-1 and the following apply.

3.1
harness
adjustable strap(s) used to suspend the machine from the operator

3.2
silencer
device for directing the exhaust gases

3.3
engine stopping device
control fitted to the machine which stops the engine

3.4
throttle trigger
throttle control
device, usually a lever, activated by the operator's hand or finger, for controlling the engine speed

3.5
throttle lock
device for temporarily setting the throttle in a partially open position

3.6
throttle trigger lockout
device that prevents unintentional activation of the throttle trigger

3.8
air tube
tube for the air flow between the fan and the nozzle

3.9
normal operation
use of the machine that is reasonably foreseeable and which is consistent with such activities as distribution of chemicals, starting, stopping, fuelling, filling with chemicals and emptying

3.10
throttle limiting device
manually activated device allowing different maximum positions of the throttle without preventing the return of the throttle to the idling position, designed to facilitate operation of the engine over a longer working period

4 General safety and environmental requirements

Knapsack combustion engine-driven air-blast sprayers shall be so designed that they can be safely used in accordance with their intended purpose, achieve minimal exposure levels to the operator and avoid unnecessary waste of plant protection products into the environment.

5 Safety requirements and/or protective measures

5.1 General

Machinery shall comply with the safety requirements and/or protective measures of this clause. In addition, the machine shall be designed according to the principles of ISO 12100 for relevant but not significant hazards which are not dealt with by this International Standard.

It is recommended that the overall mass of the knapsack mistblower at the maximum load, measured with full fuel and chemical tanks, as indicated by the manufacturer, not exceed 25 kg.

NOTE to be reviewed during DIS stage. Note 2 to entry: in some Regions the specified limit could be exceeded.

Wearing parts (such as nozzles, filters, anti-drip valves, valves, diaphragms) specified in the instruction handbook shall be changeable without special tools, unless provided with the sprayer, by an operator wearing appropriate protective gloves and without contamination of the operator and the environment.

Compliance shall be checked by inspection and function test.

5.2 Stability when in operation

The centre of gravity of the upright sprayer shall not be located at a horizontal distance greater than 150 mm from the back support of the harness with fuel and spray tanks filled to their nominal volume and with the equipment ready for use.

Compliance shall be checked by measurement as described in 5.6 of ISO 19932-2:2013.

5.3 Exhaust system

The exhaust outlet shall be located so as to direct exhaust emissions away from the operator in the normal operating position.

Compliance shall be checked by inspection and functional testing.

5.4 Air tube and chemical hoses

The air tube shall be fitted with a handle on which a throttle trigger complying with 6.5.2 and an engine stopping device complying with 6.5.3 are mounted.

To adjust the flow of chemicals to the nozzle, an on-off valve shall be fitted such that it can be easily reached by the operator in working position.

The minimum length of the air tube from the middle of the hand grip to the extremity of the air tube shall be 500 mm as shown in Figure 1.

Dimensions in mm

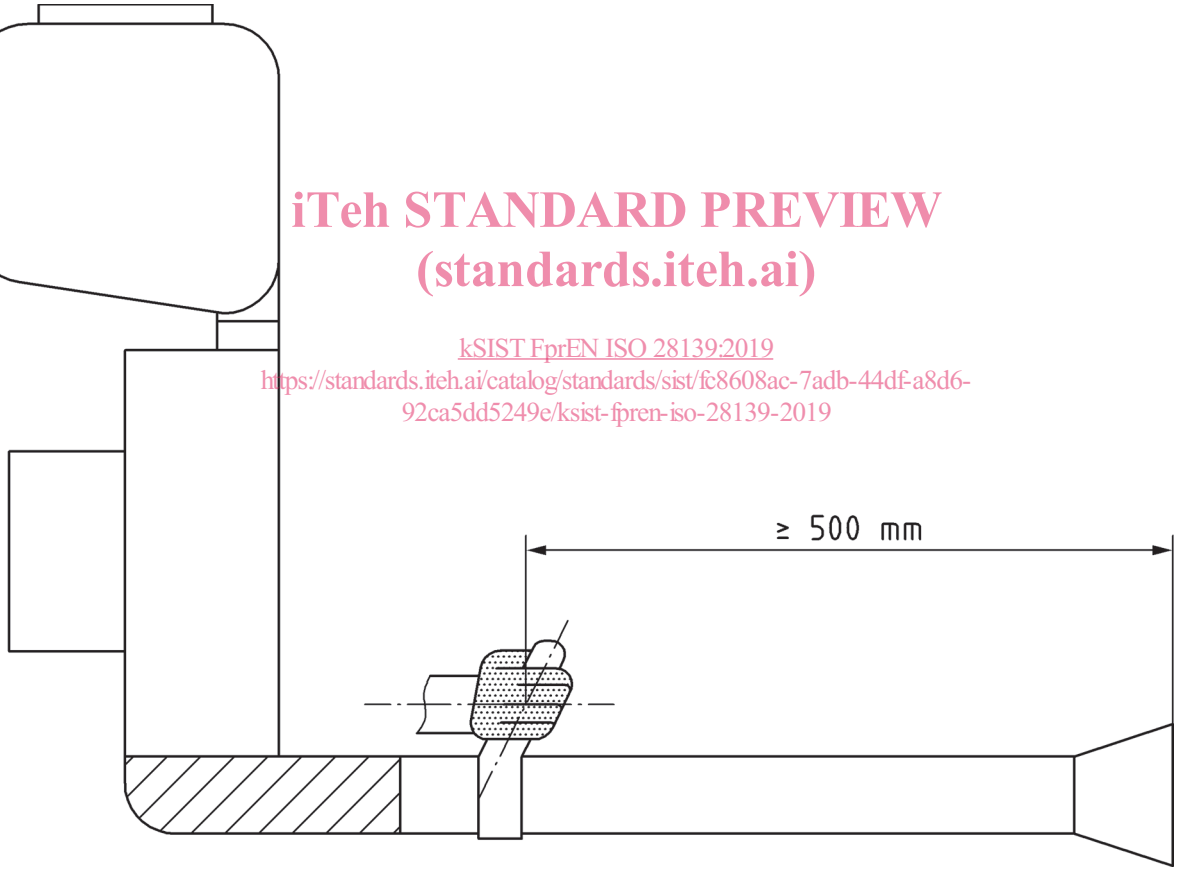

Figure 1 — Length of the air tube

The air tube shall not be detachable without the use of a tool. This requirement does not apply to machines where the air tube detaching does not allow to reach the moving elements according to ISO 13857.

Compliance shall be checked by inspection, functional testing and measurement.

5.5 Controls

5.5.1 General

All controls shall be designed to be operable by an operator wearing gloves. Compliance shall be checked by functional testing.

Where the purpose of a control might not be obvious to the user, the control's function, direction and/or method of operation shall be clearly identified by a durable label or mark. Compliance shall be checked by inspection.

Detailed instructions on the operation of the control(s) shall be provided in the instruction handbook.

Compliance shall be checked by inspection.

5.5.2 Handle

The length of the gripping surface of the handle shall be at least 100 mm.

Compliance shall be checked by measurement.

5.5.3 Throttle trigger

The machine shall be fitted with a throttle trigger that, when released, automatically reverts to the idling position and that is retained in that position by the automatic engagement of a throttle trigger lockout.

The throttle trigger shall be positioned so that it can be pressed and released with a gloved hand holding the handle on which the throttle trigger is mounted.

If a throttle lock is provided for starting, it shall be automatically released when the throttle trigger is operated.

The throttle lock shall be designed so that two or more independent motions are required to engage the throttle lock.

If a throttle limiting device is provided, it shall be positioned so that it can be operated and easily released by a gloved hand holding the handle to which the device is mounted.

Compliance shall be checked by inspection, functional testing and measurement.

5.5.4 Engine stopping device

The machine shall be fitted with an engine stopping device by which the engine can be brought to a full stop and that does not depend on sustained manual effort for its operation. The control for this device shall be attached adjacent to the throttle control so that it can be activated by the operator when holding the gripping area with a gloved hand. .

The purpose and method of operation of the device shall be clearly and durably marked. The colour of the control shall clearly contrast with the background.

Compliance shall be checked by inspection and functional testing.

5.5.5 Starting device

A starting device shall be provided to allow starting of the engine without the need for separate, independent auxiliary assistance (for example, belts or cables).

When the machine is fitted with an electric starting device, two or more independent motions shall be required to engage the device.