SLOVENSKI STANDARD
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Oprema za nego vrta - Vrtni pihalniki, vrtni sesalniki in vrtni pihalniki/sesalniki - Varnost

Garden equipment - Garden blowers, vacuums and blower/vacuums - Safety

Gartengeräte - Blasgeräte, Sauggeräte und Blas-/Sauggeräte für den Garten - Sicherheit

Matériel de jardinage - Souffleurs, aspirateurs et aspirateurs-souffleurs de jardin - Sécurité

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65.060.70	Vrtnarska oprema	Horticultural equipment

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Garden equipment - Garden blowers, vacuums and blower/vacuums - Safety

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Foreword

This document (EN 15503:2009) has been prepared by Technical Committee CEN/TC 144 “Tractors and machinery for agriculture and forestry”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2010, and conflicting national standards shall be withdrawn at the latest by May 2010.

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This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) 98/37/EC and 2006/42/EC.

For relationship with EU Directive(s) 98/37/EC and 2006/42/EC, see informative Annexes ZA and ZB, which are integral parts of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This European Standard is a type C standard as stated in EN ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and 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 B standards, the provisions of this type C standard 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.

1 Scope

This European Standard specifies the safety requirements and their verification for the design and construction of hand-held combustion engine powered and back-pack combustion engine powered, garden vacuums and garden blower/vacuums with or without shredding means and garden blowers, designed for one operator only. In addition, it specifies the type of information on safe working practices (including residual risks) to be provided by the manufacturer.

Throughout this European Standard the term 'machine' is used to mean all the types of garden blowers and vacuums covered by it.

This European Standard deals, with all hazards, hazardous situations and events relevant to these machines when they are used as intended and under the conditions foreseen by the manufacturer (see Clause 4), except for:

- vibration of backpack machines;

- structural integrity for blowers and blower vacuums;

- strength for harnesses and back-pack supports.

This European Standard is not applicable to:

— walk-behind, hand-guided (support-wheeled) and ride-on machines;

— mains driven and battery powered blowers and vacuums of combinations thereof;

NOTE EN 60335-1 [1] and IEC 60335-2-100 [2] give the safety requirements for mains driven blowers and blower vacuums, vacuum cleaners for household and industrial use.

This European Standard is not applicable to machines which are manufactured before the date of its publication as EN.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1088:1995, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection*

EN 14930:2007, *Agricultural and forestry machinery and gardening equipment — Pedestrian controlled and hand-held machines — Determination of accessibility of hot surfaces*

EN ISO 3744:2009, *Acoustics — Determination of sound power levels of noise sources using sound pressure — Engineering method in an essentially free field over a reflecting plane (ISO 3744:1994)*

EN ISO 4871:2009, *Acoustics — Declaration and verification of noise emission values of machinery and equipment (ISO 4871:1996)*

EN ISO 11201:2009, *Acoustics — Noise emitted by machinery and equipment — Measurement of emission sound pressure levels at a work station and at other specified positions — Engineering method in an essentially free field over a reflecting plane (ISO 11201:1995, including Cor 1:1997)*

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*

EN ISO 13849-1:2008, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2006)*

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

EN ISO 22867:2008, *Forestry machinery — Vibration test code for portable hand-held machines with internal combustion engine — Vibration at the handles (ISO 22867:2004, including Cor 1:2006)*

EN ISO 22868:2008, *Forestry machinery — Noise test code for portable hand-held machines with internal combustion engine — Engineering method (Grade 2 accuracy) (ISO 22868:2005)*

IEC 60068-2-75:1997, *Environmental testing — Part 2: Tests — Test Eh: Hammer tests*

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 EN ISO 12100-1:2003 and the following apply:

3.1
garden blower
machine which moves debris by the force of blasting air

3.2
back-pack powered blower
garden blower designed to have the power source carried on the operator's back by means of a supporting device consisting of a frame and harness

3.3
back-pack powered vacuum
garden vacuum designed to have the power source and collector carried on the operator's back by means of a supporting device

3.4
debris
organic material of vegetable origin such as leaves and grass clippings

3.5
debris collector
part or combination of parts of the machine designed to contain the debris

3.6
dirty fan construction
construction where the debris being collected passes the air-moving fan

3.7
garden vacuum
machine which collects debris into a debris collector by means of air suction

3.8
guard
physical barrier, designed as part of the machine, to provide protection

3.9
handle
part of the machine designed for holding or carrying the machine during normal use

3.10
hand-held garden blower
garden blower designed to be held by hand, possibly assisted by a harness

3.11
hand-held garden vacuum
garden vacuum held by hand, possibly assisted by a harness

3.12
normal operation
use of the machine which is reasonably foreseeable, and which is consistent with operating, i.e. starting, stopping and re-fuelling

3.13
normal use
normal operation, plus routine maintenance, servicing, cleaning, transporting, attaching or removing accessories, and making ordinary adjustments as determined by the manufacturer's instructions

3.14
operator control
part of the machine requiring operator actuation

3.15
shredding means
means designed to cut debris into smaller pieces

3.16
throttle locking device
device for temporarily arresting the throttle in a partially open position, to aid (assist) starting

3.17
throttle setting device
arrest device allowing the throttle to be temporarily fixed in and released from any required position to ease working with the machine over a period of time

4 List of significant hazards

For the purposes of this European Standard, Table 1 gives, for defined danger zones, all the significant hazards, the significant hazardous situations and events covered by this European Standard, that have been identified by risk assessment as being significant for this type of machine, and which require specific action to eliminate or to reduce the risk

The attention is drawn to the necessity to verify that the safety requirements specified in this European Standard apply to each significant hazard presented by a given machine and to validate that the risk assessment is complete with particular attention to:

— the intended use of the machine including maintenance, setting and cleaning and its reasonably foreseeable misuse;

— the identification of all significant hazards associated with the machine.

Table 1 — List of significant hazards associated with hand-held integrally powered garden vacuums and garden blower/vacuums with or without shredding means and garden blowers

Ref. N[r].	Hazard	Location or event	Reference of this European Standard
Hazards, hazardous situations and hazardous events			
1	**Mechanical hazards** due to		
1.1	Inadequacy of mechanical strength	Ejection of sucked up parts or broken parts through casing Weakening casing by overheating of motor compartment	5.4, 5.5,
1. 2	Shearing, cutting, severing, entanglement, drawing-in or trapping hazard	Contact with shredding means or fan	5.1, 5.6.1, 6.1, 6.2, 6.3 and Annex C
2	**Electrical hazards** due to:		
2.1	Contact with live parts under high voltage	Contact with HT ignition parts	5.11.2
3	**Thermal hazards**, resulting in:		
3.1	Burns, scalds and other injuries by a possible contact of persons with objects or materials with an extreme high or low temperature, by flames or explosions and also by the radiation of heat sources	Contact with cylinder or exhaust pipe	5.3
4	**Hazards generated by noise**, resulting in:		
4.1	Hearing loss (deafness), other physiological disorders (e.g. loss of balance, loss of awareness) Interference with speech, communication and warning signals.	Noise emitted by the machine Operator not being aware of surrounding or not noticing important information	5.8, 6.1, 6.2, 6.3 and Annex A
5	**Hazards generated by vibration**		
5.1	Use of hand-held machines resulting in a variety of neurological and vascular disorders	Vibrations transmitted by the machine	5.9, 6.1 and Annex B
6	**Hazards generated by materials and substances** (and their constituent elements) used by the machinery		
6.1	Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes, and dusts	Contact with fuel Inhalation of exhaust fumes	5.10
6.2	Fire or explosion hazard	Fuel coming into contact with hot parts	5.11
~~8~~ **7**	**Hazards requiring application of ergonomic principles in machinery design** from:		
7.1	Unhealthy postures or excessive effort	Heavy and voluminous machines	5.6.3, 5.13.2 and 6.1
7.2	Inadequate consideration of hand-arm or foot-leg anatomy	Handling of machine and position of handgrips	5.6.2
7.3	Neglected use of personal protective equipment	Ejection of particles from the discharge opening of the machine Hot parts of the machine Noise emitted from the machine	6.1 and Annex C
7.4	Inadequate design, location or identification of manual controls	Handgrips and throttle setting device	5.6.1, 6.2

Ref. N[r].	Hazard	Location or event	Reference of this European Standard
8	**Unexpected start-up, unexpected over-run/over-speed** from:		
8.1	Errors made by the operator (due to mismatch of machinery with human characteristics and abilities)	Use of a machine without a harness	6.1
9	**Break-up during operation**	Broken fan and/or shredding means	5.5
10	**Ejected objects**	Objects ejected from the discharge opening of the machine	5.5

5 Safety requirements and/or protective measures

5.1 General

The machine 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 EN ISO 12100 for relevant but not significant hazards, which are not dealt with by this document (e.g. sharp edges of the machine frame).

NOTE For guidance in connection with risk reduction by design, see Clause 4 of EN ISO 12100-2:2003, and for safeguarding measures, see Clause 5 of EN ISO 12100-2:2003

Parts are considered stable when conditioned in the location where testing is carried out for a period of 24 hours and the ambient temperature is maintained at not less than 15 °C.

Machines shall also be marked according to 6.2 and carry warnings according to 6.3.The instruction handbook to be provided with the machine shall comply with 6.1.

5.2 All machines

The infeed and discharge opening shall be guarded to prevent contact during normal operation taking into account the safety distances conforming to 4.2.4.1 and 4.2.4.3 of EN ISO 13857:2008.

All guards shall be permanently attached to the machine and shall not be detachable without the use of tools. The opening of guards shall require the use of a tool.

If regular access (see 6.1 for user maintenance) to moving parts is needed (e.g. for removing debris), guards shall be equipped with interlocks in compliance with EN 1088, which disable the drive to the relevant moving parts when accessing the moving parts. The safety-related control system of the interlocked guards shall comply with at least category 1 of EN ISO 13849-1:2008.

Compliance is checked by inspection and measurement.

5.3 Hot parts guarding

Any metallic surface of the machine that has a temperature of over 80 ºC, or plastic part that has a temperature of over 94 ºC, shall be considered as a hot surface.

Such surfaces shall be guarded or designed so that the test acceptance in EN 14930 is met.

Surface temperature and compliance shall be determined in accordance with EN 14930.

The inside and the end of the exhaust pipe are not considered accessible hot parts and therefore do not have to pass the test of EN 14930.