SLOVENSKI STANDARD
oSIST prEN 1501-5:2018

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Vozila za zbiranje odpadkov - Splošne in varnostne zahteve - 5. del: Iztresalniki za vozila za zbiranje odpadkov

Refuse collection vehicles - General requirements and safety requirements - Part 5: Lifting devices for refuse collection vehicles

Abfallsammelfahrzeuge - Allgemeine Anforderungen und Sicherheitsanforderungen - Teil 5: Schüttungen für Abfallsammelfahrzeuge

Véhicules de collecte de déchets - Exigences générales et exigences de sécurité - Partie 5 : Lève-conteneurs pour véhicules de collecte de déchets

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ICS:

13.030.40	Naprave in oprema za odstranjevanje in obdelavo odpadkov	Installations and equipment for waste disposal and treatment
43.160	Vozila za posebne namene	Special purpose vehicles

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English Version

Refuse collection vehicles - General requirements and safety requirements - Part 5: Lifting devices for refuse collection vehicles

Véhicules de collecte de déchets - Exigences générales et exigences de sécurité - Partie 5 : Lève-conteneurs pour véhicules de collecte de déchets

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 183.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 1501-5:2018) has been prepared by Technical Committee CEN/TC 183 “Waste management”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1501-5:2011.

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).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

The EN 1501 series consists of the following parts:

— *Refuse collection vehicles — General requirements and safety requirements — Part 1: Rear loaded refuse collection vehicles*;

— *Refuse collection vehicles — General requirements and safety requirements — Part 2: Side loaded refuse collection vehicles*;

— *Refuse collection vehicles and their associated lifting devices — General requirements and safety requirements — Part 3: Front loaded refuse collection vehicles*;

— *Refuse collection vehicles and their associated lifting devices — General requirements and safety requirements — Part 4: Noise test code for refuse collection vehicles*;

— *Refuse collection vehicles — General requirements and safety requirements — Part 5: Lifting devices for refuse collection vehicles* (this part).

It will be enforced at the same time as prEN 1501-1:2018, prEN 1501-2:2018 and prEN 1501-3:2018 and applied whenever the rear loaded RCV is fitted with a lifting device.

Introduction

This European Standard is a type C standard as stated in EN ISO 12100:2010.

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

The user`s attention is drawn to the possibility that for lifting devices described within prEN 1501-5, compliance with this European Standard may require the use of an invention covered by patent rights.

By publication of prEN 1501-5, no position is taken with respect to the validity of such claim or of any patent rights in connection therewith. However, each patent holder listed in this annex has filed with the CEN-European Committee for Standardization a statement of willingness to grant a licence under such rights that they hold on reasonable and non-discriminatory terms and conditions to applicants desiring to obtain such a licence.

This European Standard should be read in conjunction with:

— the documents developed for refuse collection vehicles (prEN 1501-1, prEN 1501-2 and prEN 1501-3) which are compatible with the refuse container lifting devices specified in this standard;

— the documents developed for mobile refuse containers according to EN 840 (all parts), for stationary refuse containers according to EN 12574 (all parts) and for selective collection containers according to EN 13071 (all parts) which are compatible with the lifting devices specified in this European Standard.

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.

While producing this standard it was assumed that:

— wherever national road regulations interfere those regulations would be met;

— the guidelines issued by the chassis-cab manufacturer have been taken into account;

— that based on measurements on different types of RCVs hand-arm vibrations are in general lower than 2,5 m/s^2;

— that based on measurements on different types of RCVs whole-body vibrations are lower than 0,5 m/s^2;

— components without specific requirements are designed in accordance with the usual engineering practice and calculation codes, including all failure modes, of sound mechanical and electrical construction and made of materials with adequate strength and of suitable quality;

— components are kept in good repair and working order, so that the required characteristics remain despite wear;

— harmful materials, such asbestos, are not used as part of RCV`s;

— only persons who have been appropriately trained will operate on RCV`s.

1 Scope

This document deals with all significant hazards, hazardous situations and events relevant to lifting devices used for the emptying of designated refuse containers into RCVs and their fitting onto the RCVs when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer throughout their foreseeable lifetime as defined in Clause 4.

This document is applicable to the design and construction of the refuse container lifting devices and the mounting of other lifting devices so as to ensure that they are fitted for their function and can be operated, adjusted and maintained during their entire lifetime. It is not applicable to the end of life of the lifting devices.

This document describes and gives the safety requirements of the lifting devices for emptying refuse containers and their interfaces with the corresponding parts of the RCVs and will be used in conjunction with prEN 1501-1 for the rear, side and front loaded RCVs. It refers to EN 1501-4 for the noise test code.

This document is not applicable to:

— operation in severe conditions e.g. extreme environmental conditions such as:

  — temperatures below −25 °C and above +40 °C;

  — tropical environment;

  — wind velocity in excess of 75 km/h;

— contaminating environment;

— corrosive environment;

— operation in potentially explosive atmospheres;

— lifting and transportation of persons;

— emptying refuse containers other than those manufactured according to EN 840 (all parts), EN 12574 (all parts), EN 13071 (all parts), and those described as paladin, diamond, skip containers;

— loading bulky refuse by means of platform or forks;

— handling of loads the nature of which could lead to dangerous situations (e.g. hot refuses, acids and bases, radioactive materials, contaminated refuse, especially fragile loads, explosives);

— operation on ships;

— fitting and operation on stationary compactors.

This document is not applicable to machinery which is manufactured before the date of its publication by CEN.

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.

EN 349, *Safety of machinery — Minimum gaps to avoid crushing of parts of the human body*

EN 574, *Safety of machinery — Two-hand control devices — Functional aspects — Principles for design*

EN 818-1, *Short link chain for lifting purposes — Safety — Part 1: General conditions of acceptance*

EN 840 (all parts), *Mobile waste and recycling containers*

EN 894-1, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 1: General principles for human interactions with displays and control actuators*

EN 894-2, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 2: Displays*

EN 894-3, *Safety of machinery — Ergonomics requirements for the design of displays and control actuators — Part 3: Control actuators*

EN 1037, *Safety of machinery — Prevention of unexpected start-up*

prEN 1501-1:2018, *Refuse collection vehicles — General requirements and safety requirements — Part 1: Rear loaded refuse collection vehicles*

prEN 1501-2:2018, *Refuse collection vehicles — General requirements and safety requirements — Part 2: Side loaded refuse collection vehicles*

prEN 1501-3:2018, *Refuse collection vehicles and their associated lifting devices — General requirements and safety requirements — Part 3: Front loaded refuse collection vehicles*

EN 1501-4, *Refuse collection vehicles and their associated lifting devices — General requirements and safety requirements — Part 4: Noise test code for refuse collection vehicles*

EN 12574-1:2006, *Stationary waste containers — Part 1: Containers with a capacity up to 10 000 l with flat or dome lid(s), for trunnion, double trunnion or pocket lifting device — Dimensions and design*

EN 12574-2, *Stationary waste containers — Part 2: Performance requirements and test methods*

EN 12574-3, *Stationary waste containers — Part 3: Safety and health requirements*

EN 12999:2011+A1:2012, *Cranes — Loader cranes*

EN 13071-1:2008, *Stationary waste containers up to 5 000 l, top lifted and bottom emptied — Part 1: General requirements*

EN 13071-2, *Stationary waste containers up to 5 000 l, top lifted and bottom emptied — Part 2: Additional requirements for underground or partly underground systems*

EN 13155, *Cranes — Safety — Non-fixed load lifting attachments*

EN 13071-3, *Stationary waste containers up to 5 000 l, top lifted and bottom emptied — Part 3: Recommended lifting connections*

EN 13135, *Cranes — Safety — Design — Requirements for equipment*

EN 13557, *Cranes — Controls and control stations*

EN 14803, *Identification and/or determination of the quantity of waste*

EN 14492-1, *Cranes — Power driven winches and hoists — Part 1: Power driven winches*

EN 60204-1:2006, *Safety of machinery — Electrical equipment of machines — Part 1: General requirements (IEC 60204 1:2005, modified)*

EN 60529, *Degrees of protection provided by enclosures (IP Code) (IEC 60529)*

EN 61131-2:2007, *Programmable controllers — Part 2: Equipment requirements and tests (IEC 61131-2:2007)*

EN 61984, *Connectors — Safety requirements and tests (IEC 61984)*

EN ISO 374-1, *Protective gloves against dangerous chemicals and micro-organisms — Part 1: Terminology and performance requirements for chemical risks (ISO 374-1)*

EN ISO 4413, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413)*

EN ISO 4414, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414)*

EN ISO 6743-4, *Lubricants, industrial oils and related products (class L) — Classification — Part 4: Family H (Hydraulic systems) (ISO 6743-4)*

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

EN ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1:2015)*

EN ISO 13849-2, *Safety of machinery — Safety-related parts of control systems — Part 2: Validation (ISO 13849-2)*

EN ISO 13850, *Safety of machinery — Emergency stop function — Principles for design (ISO 13850)*

EN ISO 13855, *Safety of machinery — Positioning of safeguards with respect to the approach speeds of parts of the human body (ISO 13855)*

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

EN ISO 14120, *Safety of machinery — Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120)*

IEC 60417 [online database], *Graphical symbols for use on equipment*

ISO 3448, *Industrial liquid lubricants — ISO viscosity classification*

ISO 4406, *Hydraulic fluid power — Fluids — Method for coding the level of contamination by solid particles*

ISO 7000 [online database], *Graphical symbols for use on equipment*

ISO 7241, *Hydraulic fluid power — Dimensions and requirements of quick-action couplings*

ISO 11898-1, *Road vehicles — Controller area network (CAN) — Part 1: Data link layer and physical signalling*

ISO 11898-2, *Road vehicles — Controller area network (CAN) — Part 2: High-speed medium access unit*

ISO 11898-3, *Road vehicles — Controller area network (CAN) — Part 3: Low-speed, fault-tolerant, medium-dependent interface*

ISO 11898-4, *Road vehicles — Controller area network (CAN) — Part 4: Time-triggered communication*

ISO 11898-5, *Road vehicles — Controller area network (CAN) — Part 5: High-speed medium access unit with low-power mode*

ISO 15817, *Earth-moving machinery — Safety requirements for remote operator control systems*

UN/ECE R-10, *Regulation No. 10 — Uniform provisions concerning the approval of vehicles with regard to electromagnetic compatibility*

UN/ECE R-46, *Regulation No. 46 — Uniform provisions concerning the approval of devices for indirect vision and of motor vehicles with regard to the installation of these devices*

UN/ECE R-65, *Regulation No. 65 — Uniform provisions concerning the approval of special warning lamps for power-driven vehicles and their trailers*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 12100 and prEN 1501-1 and the following apply.

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

3.1
refuse collection vehicle
RCV
vehicle used for the collection and transportation of refuse (e.g. household refuse, bulky refuse, recyclable materials) based on loading via refuse containers or by hand

Note 1 to entry: It consists of a chassis-cab onto which a bodywork is mounted.

[SOURCE: prEN 1501-1:2018, 3.1]

3.1.1
rear loaded RCV
RCV, in which refuse is loaded into the body from the rear

[SOURCE: prEN 1501-1:2018, 3.2]

Note 1 to entry: See Figure A.1 a).

3.1.2
side loaded RCV
RCV into which the refuse or recyclable materials are loaded from the sides

Note 1 to entry: In side loaded RCVs refuse is transferred manually or mechanically from the side over the rave rail into a hopper. A compaction mechanism, if fitted, then transfers and compacts the refuse from the hopper into a fixed or interchangeable body of the side loaded RCV. To discharge, either the body is tilted, rotated or an ejection device is used.

[SOURCE: prEN 1501-2:2018, 3.2]

Note 2 to entry: See Figure A.1 b).

3.1.3
front loaded RCV
RCV into which the refuse or recyclable materials are loaded from the front

Note 1 to entry: In front loaded RCVs refuse is transferred manually or mechanically from the front over the rave rail into a hopper. A compaction mechanism, if fitted, then transfers and compacts the refuse from the hopper into a fixed or interchangeable body of the front loaded RCV. To discharge, either the body is tilted, rotated or an ejection device is used. The trajectory of the refuse container is over the top of the cab or the front axle, regardless where the refuse container is picked up.

[SOURCE: prEN 1501-3:2018, 3.2]

3.1.4
travel movement
unrestricted motorized movement of the RCV

[SOURCE: prEN 1501-1:2018, 3.28]

3.1.5
positioning movement
limited motorized movement of the RCV (e.g. when approaching and picking up a refuse container)

3.2
lifting device
mechanism fitted onto the RCV for loading refuse into its body

3.2.1
refuse container lifting device
mechanism fitted onto an RCV for emptying designated refuse containers

Note 1 to entry: Refuse container lifting devices other than specified in EN 12999.

3.2.1.1
split refuse container lifting device(s)
two or more adjacent devices with their own independent danger zone

3.2.1.2
combined refuse container lifting device(s)
two or more devices which share a common danger zone

3.2.1.3
integrated refuse container lifting device
designed to be permanently attached to the body of the RCV

3.2.1.4
demountable refuse container lifting device
designed to be detachable from the body of the RCV

Note 1 to entry: Detachable means for example bolted.

3.2.1.5
interchangeable refuse container lifting device
designed to be capable of being fitted on different designated RCVs provided with one standard interface

Note 1 to entry: Standard interfaces can have mechanical, pneumatic, hydraulic, electrical, dimensional and functional aspects.

3.2.2
loader crane
powered crane comprising a column, which slews about a base, and a boom system which is attached on to the top of the column, usually fitted on a commercial vehicle (including trailer) with a significant residual load carrying capability, and being designed for loading and unloading the vehicle as well as for other duties as specified by the manufacturer in the operator's manual

[SOURCE: EN 12999:2011+A1:2012; 3.1.1 — lexically modified]

3.3
interface
connections between two parts and/or systems of the RCV

[SOURCE: prEN 1501-1:2018, 3.23]

3.3.1
mechanical interface
mechanical connection(s) between the lifting device and the corresponding part of the RCV

3.3.2
hydraulic interface
hydraulic connection(s) between the lifting device and the corresponding part of the RCV

3.3.3
pneumatic interface
pneumatic connection(s) between the lifting device and the corresponding part of the RCV

3.3.4
electrical interface
electrical connection(s) between the lifting device and the corresponding part of the RCV

3.4
mounting frame
framework used to fit the interchangeable or demountable refuse container lifting device on the RCV

Note 1 to entry: The mounting frame is provided as a fixed opening, a demountable frame, or a swivel hinged frame.

3.5
lifting carriage
sub-assembly of the lifting device onto which the pick-up system is normally fitted

3.6
guide system
component(s) to laterally locate the pick-up system of the designated refuse container

3.7
locking system
mechanism which locks the pick-up system of the designated refuse container to the refuse container lifting device for emptying purpose

3.8
pushing pad
component of the lifting device onto which the front wall of the designated refuse container body rests when it is being lifted

3.9
container restraint device
system located towards the top of the loading opening of the RCV enabling the movement of the designated refuse container to be stopped progressively beyond the emptying angle of the lifting device

3.10
lid opener
device which opens the lid of the designated refuse container during the emptying cycle

3.11
pick-up system
part(s) of the lifting device intended to be in contact with the refuse container for receiving its corresponding part with the purpose of holding, lifting and emptying it

3.11.1
comb pick-up system
horizontal row of upward facing teeth and locking system to retain the designated refuse container according to frontal receivers forms A, B, and C of EN 840-1, EN 840-2, EN 840-3 and EN 840-4 during emptying

Note 1 to entry: See Figures A.2 to A.5.

3.11.2
trunnion pick-up system
pair of lateral arms with trunnion receiver and locking mechanism to retain the designated refuse container according to lateral receivers type A of EN 840-2, EN 840-3, EN 840-4 and EN 12574-1 during emptying

Note 1 to entry: See Figures A.7 to A.9.

3.11.3
double trunnion pick-up system
pair of lateral arms with two trunnion receivers and locking mechanism to retain the designated refuse container according to lateral receivers type B of EN 12574-1 during emptying

Note 1 to entry: See Figure A.10.

3.11.4
diamond pick-up system
triangular shaped element(s) with one corner of the triangle facing upwards and locking system to retain designated diamond refuse container

Note 1 to entry: See Figures A.11 and A.12.

3.11.5
BG pick-up system
pair of lateral arms and locking mechanism to retain the designated BG refuse container complying with lateral receivers type B of EN 840-4 during emptying

Note 1 to entry: See Figure A.13.

3.11.6
pocket pick-up system
pair of lateral arms and locking mechanism to retain the designated refuse container complying with lateral receivers type C of EN 12574-1 during emptying

Note 1 to entry: See Figures A.14 and A.15.

3.11.7
clamping system
mechanism which holds the designated refuse container(s) by application of jaws

Note 1 to entry: When these jaws overlap, it is called an overlapping clamp.

3.11.8
skip pick-up system
framework at the back end of the lifting device to catch and lock the trunnions/pivots or the trunnion bar of the skip container for lifting and or tipping it

Note 1 to entry: See Figure B.3.

3.11.8.1
two chains skip pick-up system
lifting device with two chains to lift, tip and put back on the ground the skip container by tipping it over against a frontal trunnion

Note 1 to entry: See Figure B.4 a).