



**SLOVENSKI STANDARD**  
**oSIST prEN 474-2:2017**  
**01-junij-2017**

---

**Stroji za zemeljska dela - Varnost - 2. del: Zahteve za buldožerje**

Earth-moving machinery - Safety - Part 2: Requirements for tractor-dozers

Engins de terrassement - Sécurité - Partie 2 : Prescriptions applicables aux bouteurs

**Ta slovenski standard je istoveten z: prEN 474-2**

[oSIST prEN 474-2:2017](https://standards.iteh.ai/catalog/standards/sist/7ef94610-3aea-42ff-a666-a196a1e4261c/osist-pren-474-2-2017)

<https://standards.iteh.ai/catalog/standards/sist/7ef94610-3aea-42ff-a666-a196a1e4261c/osist-pren-474-2-2017>

**ICS:**

53.100      Stroji za zemeljska dela      Earth-moving machinery

**oSIST prEN 474-2:2017**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[oSIST prEN 474-2:2017](https://standards.iteh.ai/catalog/standards/sist/7ef94610-3aea-42ff-a666-a196a1e4261c/osist-pren-474-2-2017)

<https://standards.iteh.ai/catalog/standards/sist/7ef94610-3aea-42ff-a666-a196a1e4261c/osist-pren-474-2-2017>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 474-2**

March 2017

ICS

Will supersede EN 474-2:2006+A1:2008

English Version

## Earth-moving machinery - Safety - Part 2: Requirements for tractor-dozers

Engins de terrassement - Sécurité - Partie 2 :  
Prescriptions applicables aux bouteurs

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 151.

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.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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.

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

<b>Contents</b>	<b>Page</b>
European foreword.....	3
Introduction .....	4
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions .....	5
4 List of additional significant hazards.....	5
5 Safety requirements and/or measures .....	5
5.1 General.....	5
5.2 Operator's seat.....	5
5.3 Rear window(s) .....	5
5.4 Rear-mounted winch .....	6
5.4.1 Mounting .....	6
5.4.2 Controls.....	6
5.4.3 Protection .....	6
6 Information for use .....	6
6.1 Warning signs.....	6
6.2 Operation manual.....	6
6.3 Machine marking.....	6
Annex A (normative) List of significant additional hazards – Tractor-dozers.....	7
Annex B (informative) Illustrations .....	8
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2006/42/EC machinery, and amending Directive 95/16/EC (recast) [2006 L157] aimed to be covered.....	10
Bibliography.....	11

iTech STANDARD PREVIEW

(standards.iteh.ai)

oSIST prEN 474-2:2017

<https://standards.iteh.ai/catalog/standards/sist/7e0d4610-3aea-42ff-a666-a196a1e4261c/osist-pren-474-2-2017>

## European foreword

This document (prEN 474-2:2017) has been prepared by Technical Committee CEN/TC 151 “Construction equipment and building material machines - Safety”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 474-2:2006+A1:2008.

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.

- Part 1: General requirements
- Part 2: Requirements for tractor-dozers
- Part 3: Requirements for loaders
- Part 4: Requirements for backhoe-loaders
- Part 5: Requirements for hydraulic excavators
- Part 6: Requirements for dumpers
- Part 7: Requirements for scrapers
- Part 8: Requirements for graders
- Part 9: Requirements for pipelayers
- Part 10: Requirements for trenchers
- Part 11: Requirements for earth and landfill compactors
- Part 12: Requirements for cable excavators
- Part 13: Requirements for rollers

This European Standard is intended for use in combination with part 1 of the series.

**prEN 474-2:2017 (E)****Introduction**

This part of prEN 474 is a type C standard as stated in EN ISO 12100.

The machinery concerned and the extent, to which hazards, hazardous situations and events are covered, is indicated in the scope of this European Standard.

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 general safety requirements for tractor-dozers, described in EN ISO 6165:2012.

This part also deals with fork application, single heavy object handling application, object handling application and log handling.

The requirements of this part are complementary to the common requirements formulated in prEN 474-1:2017.

This part does not repeat the requirements from prEN 474-1:2017, but adds or replace the requirements for application for tractor-dozers.

This European Standard deals with all significant hazards, hazardous situations and events relevant to earth-moving machinery, when used as intended and under conditions foreseen but also taking into account any reasonably foreseeable misuse thereof (see Clause 4). This European Standard specifies the appropriate technical measures to reduce risks arising from the significant hazards, hazardous situations and events during the whole foreseeable lifecycle of the machinery.

This European Standard is not applicable to earth-moving machinery, which are manufactured before the date of publication of this European Standard by CEN.

**NOTE** For travelling on public roads, national traffic regulations apply (e.g. braking, steering, lighting, towing etc.) until harmonized requirements are available.

**2 Normative references**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

prEN 474-1:2017, *Earth-moving machinery — Safety — Part 1: General requirements*

EN ISO 7096:2008, *Earth-moving machinery — Laboratory evaluation of operator seat vibration (ISO 7096:2000)*

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

ISO 6016:2008, *Earth-moving machinery — Methods of measuring the masses of whole machines, their equipment and components*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 474-1:2017, EN ISO 12100:2010 and the following apply.

Terminology for tractor-dozers is specified in ISO 6747:2013 and the most common tractor-dozers are illustrated in Annex B of this European Standard.

Note 1 to entry: Definitions used in EN and ISO standards referred to in this European Standard are also valid for this document.

#### 3.1

##### **tractor-dozer**

self-propelled crawler or wheeled machine with equipment having either dozing attachment which cuts, moves, and grades material through forward motion of the machine or a mounted attachment used to exert a push or a pull force (see EN ISO 6165:2012)

#### 3.2

##### **attachment (working tool)**

component or assembly of components, which can be mounted onto the base machine or equipment (see ISO 6746-1:2003 and ISO 6746-2:2003+TC1:2004) for a specific use (see ISO 6016:2008)

EXAMPLES Ripper, scarifiers, winch.

### 4 List of additional significant hazards

See Annex A.

NOTE Annex A (normative) contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this European Standard, identified by risk assessment as significant for this type of machinery and which require action to eliminate or reduce the risk.

### 5 Safety requirements and/or measures

#### 5.1 General

Tractor-dozers shall comply with the requirements of prEN 474-1:2017, as far as not modified or replaced by the requirements of this part.

#### 5.2 Operator's seat

prEN 474-1:2017, 5.4.1.4 shall apply with the following addition:

The seat shall meet the input spectral according to EN ISO 7096:2008:

- class EM6 for crawler dozers less than 50 000 kg operating mass according to ISO 6016:2008;
- class EM5 for wheel dozers;
- for crawler dozer greater than or equal to 50 000 kg, see EN ISO 7096:2008.

#### 5.3 Rear window(s)

prEN 474-1:2017, 5.3.2.5 shall apply for rear window(s) with the following provisions:

- arrangement to defrost the rear window(s) shall be made;
- the rear window(s) shall be fitted with a motorised wiper(s) and washer.

**prEN 474-2:2017 (E)****5.4 Rear-mounted winch****5.4.1 Mounting**

The means for securing a winch to the machine structure shall be designed to withstand a force of twice the maximum line-pull that can be exerted by the rope without permanent deformation.

ISO 19472:2006+TC1:2006 should be used as guidance for design of the mounting system.

**5.4.2 Controls**

The winch controls shall be located at the operator's station and shall fulfil the requirements stated in ISO 10968:2004.

**5.4.3 Protection**

Where a rear-mounted winch is fitted, provision shall be made to allow for protection.

Tractor-dozers equipped with a rear winch shall be equipped with adequately sized protective screen(s) (minimum steel wire diameter 6 mm woven wire mesh with a maximum opening of 45 mm x 45 mm), or equivalent protection between the operator and the winch.

ISO 8084:2003 should be used as guidance for design.

The screen width and height shall cover at least:

- the rear window, for machines fitted with cab;
- the rear of the minimum space envelope as specified in EN ISO 3411:2007 (see Figure 4) for machines without a cab.

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

**6 Information for use**

[oSIST prEN 474-2:2017](https://standards.iteh.ai/catalog/standards/sist/7ef94610-3aea-42ff-a666-a196a1e4261c/osist-pren-474-2-2017)

<https://standards.iteh.ai/catalog/standards/sist/7ef94610-3aea-42ff-a666-a196a1e4261c/osist-pren-474-2-2017>

**6.1 Warning signs**

prEN 474-1:2017, 7.1 shall apply with the addition of a specific warning sign using a symbol according to ISO 6405-2:1993+AMD1:1997+AMD2:2004 if a winch is fitted.

**6.2 Operation manual**

prEN 474-1:2017, 7.2 shall apply with the addition that the manufacturer shall provide instruction for operation and safe use of winches, if fitted.

**6.3 Machine marking**

prEN 474-1:2017, 7.3 shall apply with the addition of the marking of the maximum pull force of the winch in Newton (N), if fitted.



## Annex A (normative)

### List of significant additional hazards – Tractor-dozers

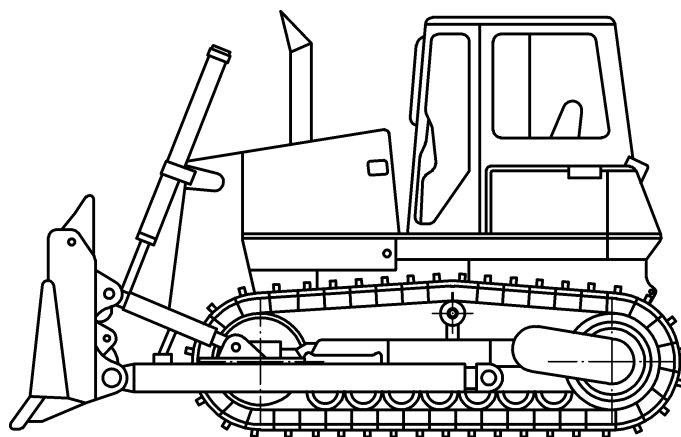
The list of significant hazards in prEN 474-1:2017, Annex A, applies with the following additions:

**Table A.1 — List of additional significant hazards**

No. <sup>a</sup>	Hazard	Relevant clauses of this European Standard
	<b>Hazards, hazardous situations and hazardous events</b>	
<b>1</b>	Mechanical hazards due to: machine parts or working tools, e.g.: mass and stability, mechanical strength	5.4
1.1	Crushing hazard	5.4
<b>5</b>	<b>Hazards generated by vibration</b>	5.2
<b>8</b>	Hazards generated by neglecting ergonomic principles in machinery design as (e.g. hazards from:	
8.7	Inadequate design, location or identification of manual controls	5.4.2
8.10	Inadequate guards and protection devices	5.4.3
<b>19</b>	<b>Linked to operator's station on the machine</b>	
19.5	Insufficient visibility from the operator's station(s)	5.4
24	Insufficient instructions for the operator (operation manual, signs, warnings, and markings)	Clause 6
	<b>Additional hazards, hazardous situations and hazardous events due to lifting</b>	
<b>25</b>	<b>Mechanical hazards and hazardous events</b>	
25.2	From insufficient mechanical strength of parts	5.4.1
<sup>a</sup> Number refers to prEN 474-1:2017, Annex A.		

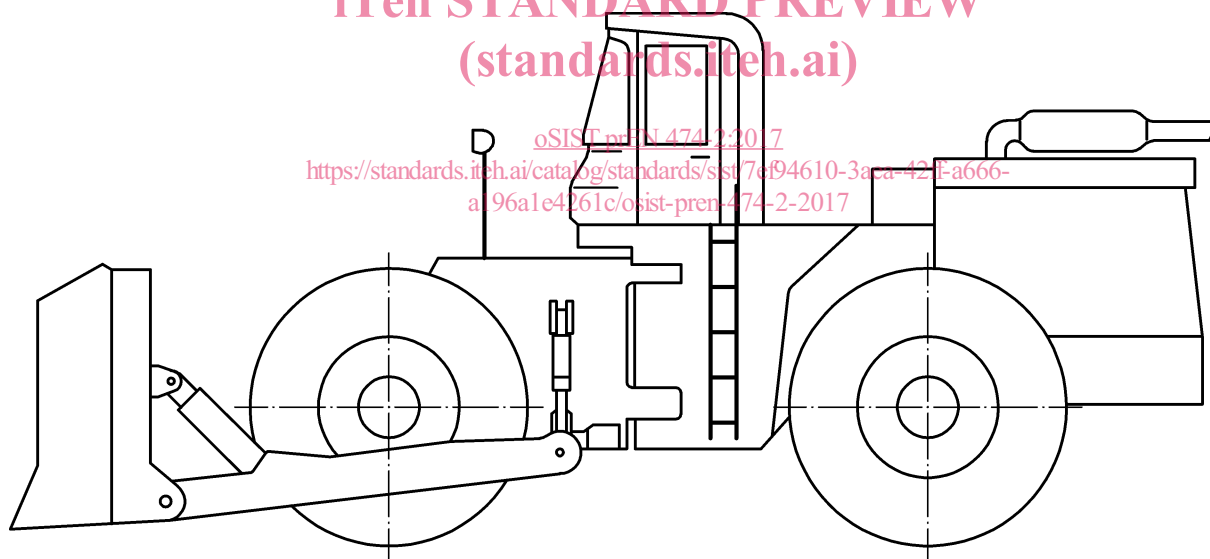
**Annex B**  
(informative)

**Illustrations**



**Figure B.1 — Crawler tractor-dozer**

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)



**Figure B.2 — Wheel tractor-dozer**