

# Earth-moving machinery — Safety —

## Part 11: Requirements for earth and landfill compactors

ICS 53.100

## National foreword

This British Standard is the UK implementation of EN 474-11:2006+A1:2008. It supersedes BS EN 474-11:2006, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted by Technical Committee B/513, Construction equipment and plant and site safety, to Subcommittee B/513/1, Earth moving machinery (International).

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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English Version

## Earth-moving machinery - Safety - Part 11: Requirements for earth and landfill compactors

Engins de terrassement - Sécurité - Partie 11: Prescriptions applicables aux compacteurs de remblais et de déchets

Erdbaumaschinen - Sicherheit - Teil 11: Anforderungen für Erd- und Müllverdichter

This European Standard was approved by CEN on 17 April 2006 and includes Amendment 1 approved by CEN on 18 August 2008.

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## Foreword

This document (EN 474-11:2006+A1:2008) 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 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of an identical text or by endorsement, at the latest by April 2009, and conflicting national standards shall be withdrawn at the latest by December 2009.

This European Standard supersedes A1 EN 474-11:2006 A1.

This document includes Amendment 1, approved by CEN on 2008-08-18.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

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.

A1 For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are integral parts of this document. A1

For bibliographic references, see EN 474-1:2006.

EN 474 "Earth-moving machinery — Safety" comprises the following parts:

- 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

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

**BS EN 474-11:2006+A1:2008**  
**EN 474-11:2006+A1:2008 (E)**

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 part of EN 474 is a type C standard as stated in EN ISO 12100-1:2003.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are 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 part of EN 474 deals with all significant hazards, hazardous situations and events relevant to earth and landfill compactors as defined in EN ISO 6165:2006, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer (see Clause 4).

Other compactors such as roller compactors, rammer compactors and vibratory plates, which are dealt with in EN 500-1:2006 and EN 500-4:2006 are not covered in EN 474.

The requirements of this part are complementary to the common requirements formulated in EN 474-1:2006.

This part does not repeat the requirements from EN 474-1:2006, but adds or replaces the requirements for application for earth and landfill compactors.

This part specifies the appropriate technical measures to eliminate or reduce risks arising from the significant hazards, hazardous situations and events during commissioning, operation and maintenance of earth and landfill compactors. This part does not deal with the specific hazards related to derivative use.

This European Standard is not applicable to earth and landfill compactors manufactured before the date of publication of this European Standard by CEN.

## **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 474-1:2006, *Earth-moving machinery — Safety — Part 1: General requirements.*

EN 12643:1997, *Earth-moving machinery — Rubber-tyred machines — Steering requirements (ISO 5010:1992, modified).*

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

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

ISO 7546:1983, *Earth-moving machinery — Loader and front loading excavator buckets — Volumetric ratings.*

ISO 10263-4:1994, *Earth-moving machinery — Operator enclosure environment — Part 4: Operator enclosure ventilation, heating and/or air-conditioning test method.*

ISO 14397-1:2002, *Earth-moving machinery — Loaders and backhoe loaders — Part 1: Calculation of rated operating capacity and test method for verifying calculated tipping load.*

## **3 Terms and definitions**

For the purposes of this European Standard, the terms and definitions given in EN 474-1:2006, EN ISO 12100-1:2003 and the following apply.

NOTE 1 Terminology for earth and landfill compactors is specified in ISO 8811:2000 and illustrated in Annex B of this European Standard.

NOTE 2 Definitions used in EN and ISO standards referred to in this European Standard are also valid for this document.



### **3.1**

#### **landfill compactor**

self-propelled, wheeled compaction machine having front-mounted equipment with a dozing or loading attachment and wheels provided with the means to crush and compact waste material, and which also moves, grades and loads soil, landfill or sanitary (refuse) materials through its own motion (see EN ISO 6165:2006)

### **3.2**

#### **dozing equipment**

equipment for moving or grading material through a motion of the machine

### **3.3**

#### **loading equipment**

equipment for loading, transporting, distributing, filling and grading material

### **3.4**

#### **drums**

steel wheels affixed to the axles with choppers, padfoot, sheepfoot or grid drums etc. which are used to cut, demolish or compact material

## **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**

Earth and landfill compactors shall comply with the requirements of EN 474-1:2006, as far as not modified or replaced by the requirements of this part.

### **5.2 Access**

EN 474-1:2006, 5.2, applies with the following exception:

For earth and landfill compactors the height of the first step shall be measured from the horizontal reference plan of the drum body.

### **5.3 Operator's station**

#### **5.3.1 General**

EN 474-1:2006, 5.3 applies with the additions in 5.3.2 to 5.3.7.

#### **5.3.2 Cab**

Earth and landfill compactor shall be fitted with a cab.

#### **5.3.3 Cab protection**

The bottom part of the cab shall be able to protect the operator against penetrating material.

#### **5.3.4 Cab door guard**

EN 474-1:2006, 5.3.2.3 applies with the addition that if the lower part of the cab door on an earth and landfill compactor is fitted with glass, a guard shall protect it unless the glazing provides equivalent protection against penetrating objects (see e. g. ECE-R 43, Annex 10, Clause 4).

#### **5.3.5 Deodorising filter**

EN 474-1:2006, 5.3.2.6 applies with addition that provision shall be made for the installation of a deodorising filter.

#### **5.3.6 Air-conditioning**

Earth and landfill compactors shall be so designed and built that an air conditioning unit can be fitted according to ISO 10263-4:1994.

#### **5.3.7 Operator's seat**

EN 474-1:2006, 5.4.1.3 applies with the addition that the seat shall meet EN ISO 7096:2000 for the input spectral class EM3.

NOTE According to EN ISO 7096:2000, 1.2.2, there is no requirement on seat vibration damping for seats used in earth and landfill compactors.

### **5.4 Fenders**

EN 474-1:2006, 5.14.7 does not apply to earth and landfill compactors.

### **5.5 Steering system**

EN 474-1:2006, 5.6.2 applies with the addition that the steering test shall be made according to EN 12643:1997 with rubber tyres fitted.

### **5.6 Braking system**

EN 474-1:2006, 5.7 applies with the exception that the test of the braking system shall be made with rubber tyres fitted but with the operating mass of the compactor as specified by the manufacturer with steel-wheels fitted.

### **5.7 Stability**

EN 474-1:2006, 5.11 applies with the following additions for machines with loading equipment:

All rated capacities as defined hereafter are based on tests and/or calculations of machines being on level and firm supporting surface.

The mass of the load, its density and the location of its centre of gravity as well as the mass of the attachment and the attachment bracket, if fitted, shall be included in the determination of the rated operating load and the size/capacity of the attachment.

To provide sufficient stability the rated operating load requirements in the intended operating applications shall be determined as follows:

- tipping load and rated operating load shall be determined according to ISO 14397-1:2002;
- volumetric rating of the bucket shall be determined according to ISO 7546:1983.

**A1** NOTE See EN 474-3:2006 for the effect on stability of particular applications. **A1**

## **5.8 Warning devices and safety signs**

5.9 of EN 474-1:2006 applies with the exception that the sound level of the audible warning device (horn) shall be 102 dB(A) instead of 93 dB(A) at 7 m distance.

## **6 Information for use**

EN 474-1:2006, 7 applies with the addition that cab deodorising filters are required for special applications.

**Annex A**  
(normative)

**List of additional significant hazards – Earth and landfill compactors**

The list of hazards in EN 474-1:2006, Annex A, applies with the following additions:

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

No. <sup>1)</sup>	Hazard	Relevant clauses of this European Standard
	<b>Hazards, hazardous situations and hazardous events</b>	
<b>1</b>	<b>Mechanical hazards</b> due to: — machine parts or working tools, e. g.: attachment, attachment bracket and/or equipment, drums	5 5
<b>16</b>	<b>Loss of stability/overturning of machinery</b>	
16.1	Rated capacities, tipping load, rated operating load, volumetric rating	5.7
	<b>Additional hazards, hazardous situations and hazardous events due to mobility</b>	
<b>18</b>	<b>Relating to travelling function</b>	
18.4	Travelling function	5.5
18.6	Insufficient ability of machinery to be slowed down, stopped and immobilised	5.6
<b>19</b>	<b>Linked to the operator's station</b> on the machine	
19.1	Fall of persons during access to (or at/from) the operator's station	5.2
19.2	Exhaust gases/lack of oxygen at the operator's station(s)	5.3.5, 5.3.6
19.4	Mechanical hazards at the operator's station(s): a) contact with the wheels; b) penetration by object	5.4 5.3.3, 5.3.4
19.7	Inadequate seating	5.3.6
<b>24</b>	<b>Insufficient instructions for the operator</b> (operation manual, signs, warnings and markings)	6

1) Number refers to Annex A of EN 474-1:2006.

**Annex B**  
(informative)

**Illustrations**

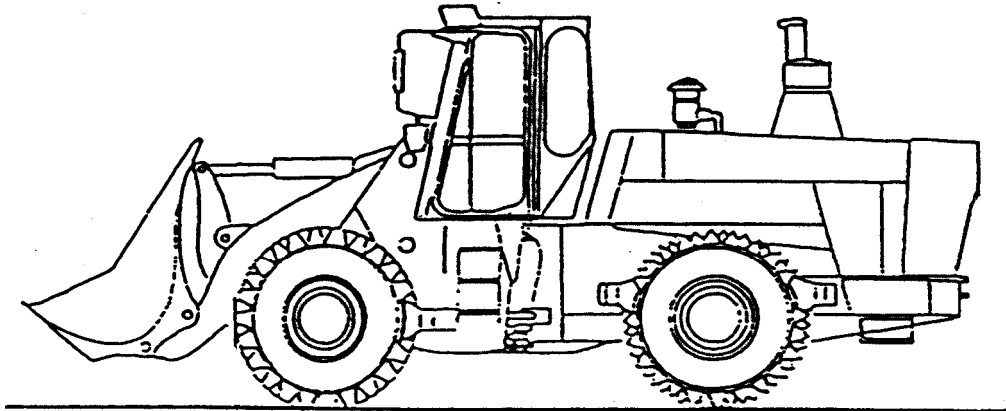


Figure B.1 — Earth and landfill compactors with loading equipment

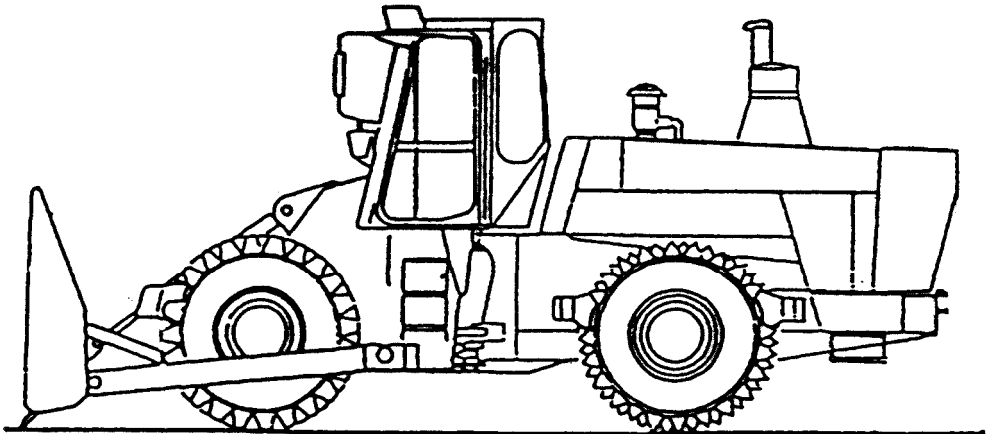


Figure B.2 — Earth and landfill compactors with dozing equipment

## Annex ZA (informative)

### Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive Machinery 98/37/EC, amended by 98/79/EC.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

**WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.**

## Annex ZB (informative)

### **A1** Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 2006/42/EC on machinery.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, compliance with the normative clauses of this standard confers, within the limits of the scope of this standard, a presumption of conformity with the relevant Essential Requirements of that Directive and associated EFTA regulations.

**WARNING** — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard. **A1**

## **Bibliography**

- [1] EN 500-1:2006, *Mobile road construction machinery — Safety — Part 1: Common requirements*
- [2] EN 500-4:2006, *Mobile road construction machinery — Safety — Part 4: Specific requirements for compaction machines*
- [3] EN ISO 6165:2006, *Earth-moving machinery — Basic types — Identification and terms and definitions (ISO 6165:2006)*
- [4] ISO 8811:2000, *Earth-moving machinery — Rollers and compactors — Terminology and commercial specifications*
- [5] ECE-R 43, *Regulation no. 43; uniform provisions concerning the approval of safety glazing materials and their installation on vehicles*





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