

Earth-moving machinery — Safety —

Part 7: Requirements for scrapers

The European Standard EN 474-7:2006 has the status of a
British Standard

ICS 53.100

National foreword

This British Standard was published by BSI. It is the UK implementation of EN 474-7:2006. It supersedes BS EN 474-7:1998, which will be withdrawn on 1 November 2008.

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 B/513/1 can be obtained on request to its secretary.

The transition period is to allow stock of products manufactured to BS EN 474-7:1998 to be exhausted and for manufacturers to adopt the requirements of the revised standard.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 28 February 2007

© BSI 2007

ISBN 978 0 580 50157 9

Amendments issued since publication

Amd. No.	Date	Comments

English Version

Earth-moving machinery - Safety - Part 7: Requirements for scrapers

Engins de terrassement - Sécurité - Partie 7: Prescriptions applicables aux décapeuses

Erdbaumaschinen - Sicherheit - Teil 7: Anforderungen für Scraper

This European Standard was approved by CEN on 17 April 2006.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, 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.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

Page

Foreword.....	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 List of additional significant hazards	6
5 Safety requirements and/or measures	6
6 Information for use	7
Annex A (normative) List of additional significant hazards – Scrapers	8
Annex B (informative) Illustrations	9
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC	11
Bibliography	12

Figures

Figure B.1 — Wheel scraper without elevator	9
Figure B.2 — Wheel scraper with elevator	9
Figure B.3 — Wheel scraper with two engines	9
Figure B.4 — Crawler scraper	10

Tables

Table A.1 — List of additional significant hazards.....	8
---	---

Foreword

This document (EN 474-7:2006) 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 May 2007, and conflicting national standards shall be withdrawn at the latest by November 2008.

This European Standard supersedes EN 474-7:1998.

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.

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

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.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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 the 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 wheel and crawler scrapers except towed scrapers 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).

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 scrapers.

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 scrapers.

This European Standard is not applicable to scrapers 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 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/DIS 6393:2004, *Earth-moving machinery — Determination of sound power level noise emissions — Stationary test conditions*

ISO/DIS 6394:2004, *Earth-moving machinery — Determination of the emission sound pressure level at the operator's position — Stationary test conditions*

ISO 10268:1993, *Earth-moving machinery — Retarders for dumpers and tractor-scrapers — Performance tests*

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 scrapers is specified in ISO 7133:1994 and illustrated in Annex B of this European Standard.

NOTE 2 Crawler scrapers are not covered in ISO 7133:1994 but are illustrated in Annex B of this European Standard.

NOTE 3 Definitions used in EN and ISO standards referred to in this European Standard are also valid for this document.

3.1

scraper

self-propelled or towed crawler or wheeled machine, which has a bowl with a cutting edge positioned between the axles and which cuts, loads, transports, discharges and spreads material through a forward motion

NOTE A powered mechanism (elevator) fixed to the scraper bowl can assist the loading through a forward motion.

3.2

towed scraper

non-self-propelled scraper (3.1) propelled by a towing machine on which the operator's station is located

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

Scrapers 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 Operator's seat

EN 474-1:2006, 5.4.1 applies with the addition that the seat shall meet the input spectral class EM2 according to EN ISO 7096:2000 for scrapers without axle or frame suspension.

5.3 Retarder

If a retarder system is installed it shall meet the requirements of ISO 10268:1993.

5.4 Articulated frame lock

EN 474-1:2006, 5.14.5 does not apply to scrapers.

5.5 Towing device

EN 474-1:2006, 5.15.5 applies with the following exception:

Attachment points (push plates, arc equipment etc.) on scrapers that are there only to permit two scrapers to assist each other in loading, are not deemed to be towing devices as defined in EN 474-1:2006, 5.15.5.

5.6 Noise

5.6.1 Sound power level

EN 474-1:2006, 5.13.2.1 applies and the sound power level for scrapers shall be measured according to ISO/DIS 6393:2004.

5.6.2 Emission sound pressure level at operator's station

EN 474-1:2006, 5.13.2.2 applies and the emission sound pressure level at operator's station for scrapers shall be measured according to ISO/DIS 6394:2004.

6 Information for use

EN 474-1:2006, 7.2 applies with the following additions:

- instructions for the use of push-blades;
- instructions for use and maintenance for elevator and auger.

Annex A (normative)

List of additional significant hazards – Scrapers

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. ¹⁾	Hazard	Relevant clauses of this European Standard
	Hazards, hazardous situations and hazardous events	
1	Mechanical hazards due to:	
	— machine parts or working tools, e. g.:	
	mass and stability, mechanical strength.	5.5
4	Hazards generated by noise	5.6
	Additional hazards, hazardous situations and hazardous events due to mobility	
18	Relating to travelling functions	
18.4	Travelling functions	5.5
18.6	Insufficient stability of machinery to be slowed down, stopped and immobilised	5.3
19	Linked to operator's station on the machine	
19.7	Inadequate seating	5.2
24	Insufficient instructions for the operator (operation manual, signs, warnings and markings)	6

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

Annex B (informative)

Illustrations

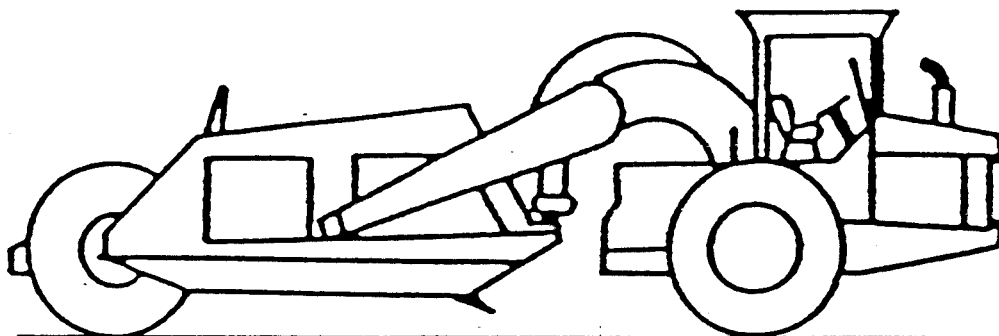


Figure B.1 — Wheel scraper without elevator

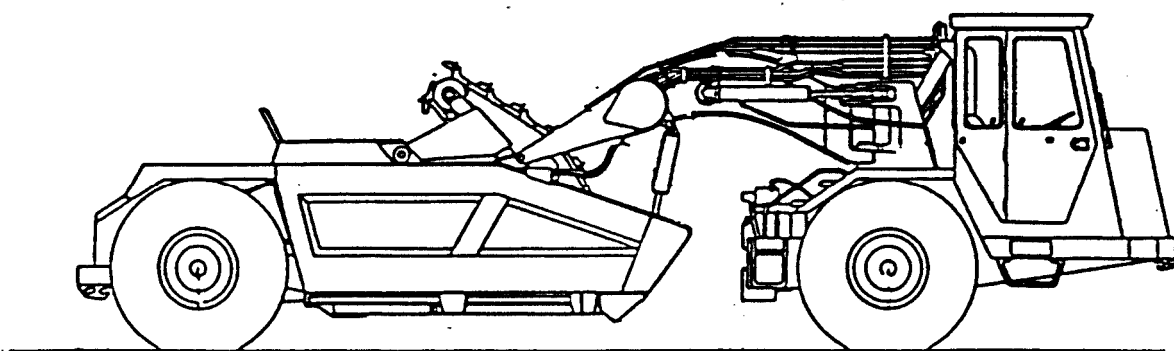


Figure B.2 — Wheel scraper with elevator

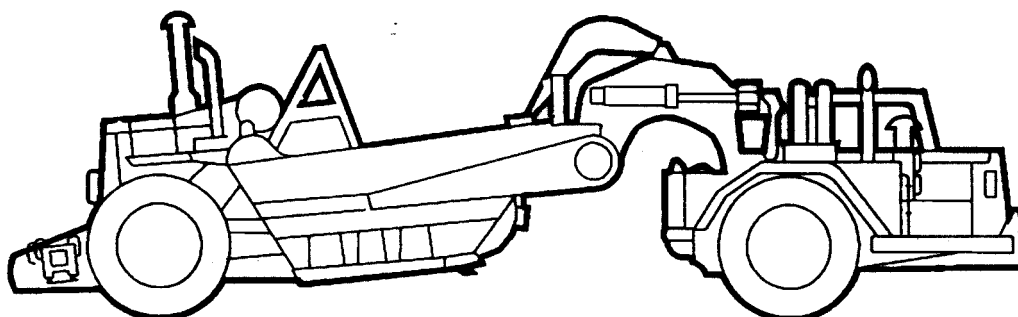


Figure B.3 — Wheel scraper with two engines

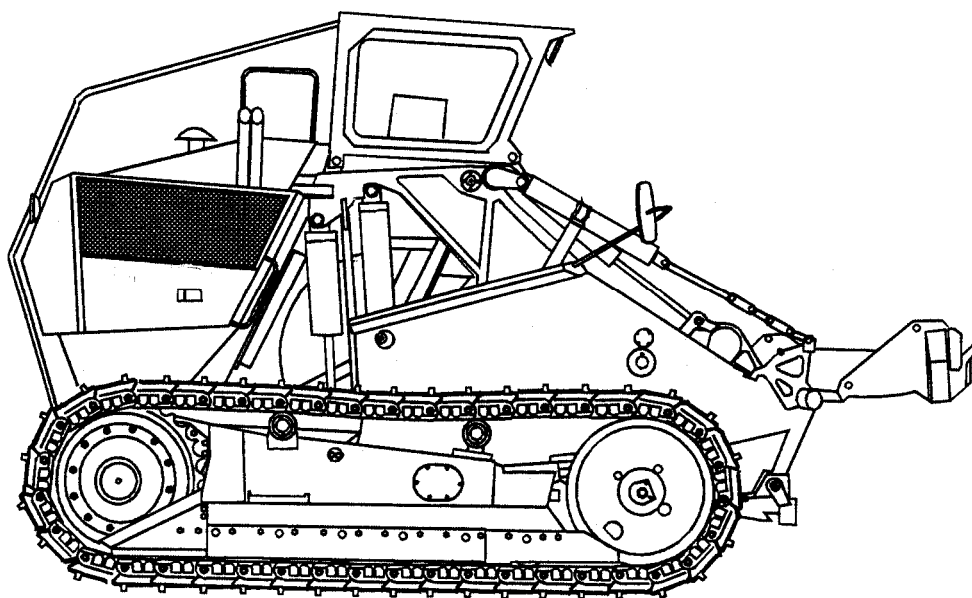


Figure B.4 — Crawler scraper

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.

Bibliography

- [1] EN ISO 6165:2006, *Earth-moving machinery — Basic types — Identification and terms and definitions (ISO 6165:2006)*
- [2] ISO 7133:1994, *Earth-moving machinery — Tractor-scrapers — Terminology and commercial specifications*

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover.
Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001.
Fax: +44 (0)20 8996 7001. Email: orders@bsi-global.com. Standards are also available from the BSI website at <http://www.bsi-global.com>.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre.
Tel: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: info@bsi-global.com.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration.
Tel: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001.
Email: membership@bsi-global.com.

Information regarding online access to British Standards via British Standards Online can be found at <http://www.bsi-global.com/bsonline>.

Further information about BSI is available on the BSI website at <http://www.bsi-global.com>.

Copyright

Copyright subsists in all BSI publications. BSI also holds the copyright, in the UK, of the publications of the international standardization bodies. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI.

This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained.

Details and advice can be obtained from the Copyright & Licensing Manager.
Tel: +44 (0)20 8996 7070. Fax: +44 (0)20 8996 7553.
Email: copyright@bsi-global.com.

BSI
389 Chiswick High Road
London
W4 4AL