

Cranes — Power driven winches and hoists —

Part 1: Power driven winches

ICS 53.020.20

National foreword

This British Standard is the UK implementation of EN 14492-1:2006+A1:2009, incorporating corrigendum March 2010. It supersedes BS EN 14492-1:2006 which is withdrawn.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 start and finish of text introduced or altered by corrigendum is indicated in the text by tags. Text altered by CEN corrigendum March 2010 is indicated in the text by AC1 AC1.

The UK participation in its preparation was entrusted by Technical Committee MHE/3, Cranes and derricks, to Subcommittee MHE/3/6, Winches, hoists, lifting blocks and accessories.

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

EN 14492-1:2009 is a “harmonized” European Standard and fully takes into account the requirements of the following European Commission mandates given under the EU Machinery Directive (98/37/EEC), and it is intended to lead to CE marking:

- M/BC/CEN/92/46, Standardization mandate assigned to CEN/CENELEC concerning equipment and protective systems intended for use in potentially explosive atmospheres; and
- M/BC/CEN/91/1, Standardization request to CEN/CENELEC concerning machines presenting hazards due to mobility or load lifting, given under the EU Machinery Directive (98/37/EEC), and intended to lead to CE marking.

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

The UK Committee would like to inform users that this standard is primarily intended for winching applications where a load is to be dragged on level ground or up an incline.

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 31 January 2008

© BSI 2010

ISBN 978 0 580 64176 3

Amendments/corrigenda issued since publication

| Date | Comments |
|----------------|--|
| 31 August 2010 | Implementation of CEN amendment A1:2009 and corrigendum March 2010 |
| | |
| | |
| | |

English Version

**Cranes - Power driven winches and hoists - Part 1: Power driven
winches**

Appareils de levage à charge suspendue - Treuils et palans
motorisés - Partie 1: Treuils motorisés

Krane - Kraftgetriebene Winden und Hubwerke - Teil 1:
Kraftgetriebene Winden

This European Standard was approved by CEN on 19 August 2006 and includes Amendment 1 approved by CEN on 6 August 2009.

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

| | |
|---|----|
| Foreword..... | 5 |
| Introduction | 6 |
| 1 Scope | 7 |
| 2 Normative references | 8 |
| 3 Terms and definitions | 10 |
| 4 List of significant hazards | 14 |
| 5 Safety requirements and/or protective measures | 19 |
| 5.1 General..... | 19 |
| 5.2 Devices | 20 |
| 5.3 Couplings | 27 |
| 5.4 Brakes for lifting and lowering movements | 27 |
| 5.5 Gearbox | 28 |
| 5.6 Load hooks..... | 28 |
| 5.7 Rope drive | 28 |
| 5.8 Chain drives | 31 |
| 5.9 Belt drives..... | 32 |
| 5.10 Pneumatic equipment | 33 |
| 5.11 Hydraulic equipment | 35 |
| 5.12 Electrical equipment of winches | 38 |
| 5.13 Reduction of noise by design..... | 41 |
| 5.14 Winches for use in a potentially explosive atmosphere..... | 42 |
| 5.15 Additional requirements for vehicle recovery winches and winches on boat trailers | 43 |
| 5.16 Additional requirements for forestry winches | 44 |
| 5.17 Additional and deviating requirements for winches for pulling purposes | 45 |
| 6 Verification of the safety requirements and/or protective measures | 46 |
| 6.1 Winches manufactured in series..... | 46 |
| 6.2 Winches designed individually | 47 |
| 7 User information | 56 |
| 7.1 General..... | 56 |
| 7.2 Special requirements | 56 |
| 7.3 Marking | 58 |
| Annex A (informative) Examples of winches | 60 |
| A.1 Drum winches | 60 |
| A.2 Traction winches..... | 61 |
| A.3 Vehicle recovery winches | 63 |
| A.4 Winches for boat trailers..... | 63 |
| A.5 Forestry winches | 64 |
| Annex B (informative) Additional requirements for winches intended to be used in potentially explosive atmospheres | 65 |
| B.1 Introduction | 65 |
| B.2 General..... | 65 |
| B.3 Hazard sources in explosion hazard areas | 66 |
| B.3.1 Electrically caused hazards | 66 |
| B.3.2 Mechanically caused hazards | 66 |
| B.3.3 Hazards caused by environmental conditions | 66 |
| B.3.4 Measures to eliminate hazards in explosion hazard areas | 66 |
| B.3.5 Marking | 67 |
| B.4 User information | 67 |
| Annex C (informative) Additional requirements for operation in aggressive environments and outdoors | 68 |

| | | |
|--|--|----|
| C.1 | General..... | 68 |
| C.2 | Ropes and chains | 68 |
| Annex D (informative) Additional requirements for operation at low temperatures | | 70 |
| Annex E (informative) Documents for hooks | | 71 |
| Annex F (normative) Noise test code | | 72 |
| F.1 | Scope | 72 |
| F.2 | Standards used in this annex..... | 72 |
| F.3 | Description of the machine family | 72 |
| F.4 | Determination of the emission sound pressure level at the operator's position by measurement | 72 |
| F.4.1 | General..... | 72 |
| F.4.2 | Winches other than construction winches | 73 |
| F.5 | Determination of the sound power level | 73 |
| F.5.1 | General..... | 73 |
| F.5.2 | Winches other than construction winches | 73 |
| F.5.3 | Construction winches | 74 |
| F.6 | Mounting and operating conditions | 75 |
| F.6.1 | General..... | 75 |
| F.6.2 | Winches other than construction winches | 76 |
| F.6.3 | Construction winches | 76 |
| F.7 | Uncertainties | 76 |
| F.8 | Information to be recorded..... | 76 |
| F.9 | Information to be reported..... | 76 |
| F.10 | Declaration and verification of noise emission values..... | 77 |
| Annex G (informative) Selection of a suitable set of cranes standards for a given application | | 78 |
| Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC | | 79 |
| Annex ZB (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 94/9/EC | | 80 |
| Annex ZC (informative) ^{A1} Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC ^{A1} | | 81 |
| Bibliography..... | | 82 |

Figures

| | |
|--|----|
| Figure 1 — Fleet angle | 11 |
| Figure 2 — Undercut groove base profile..... | 31 |
| Figure A.1.1 — Drum winch, manufactured in series | 60 |
| Figure 1.2 — Drum winch, manufactured individually | 60 |
| Figure A.1.3 — Drum winch, pneumatically driven..... | 60 |
| Figure A.2.1 — Traction winch, standard type | 61 |
| Figure A.2.2 — Traction winch with 2 load bearing ropes and storage drum | 61 |
| Figure A.2.3 — Traction winch with storage drum | 62 |
| Figure A.3.1 — Vehicle recovery winch with electrical drive | 63 |
| Figure A.3.2 — Vehicle recovery winch with hydraulic drive..... | 63 |

| | |
|---|----|
| Figure A.4 — Winch for boat trailers with electrical drive | 63 |
| Figure A.5. — Forestry winch with rope drum and hydraulic drive | 64 |
| Figure F.1 — Microphone positions on the hemisphere | 75 |

Tables

| | |
|--|----|
| Table 1 — List of significant hazards and associated requirements | 15 |
| Table 1 (<i>continued</i>) | 16 |
| Table 2 — Values for v_h for estimation of ϕ_{IAL} | 25 |
| Table 3 — Limit revolutions for three-phase slipring motors | 40 |
| Table 4 — Stall torques for three-phase slipring motors with contactor control | 40 |
| Table 5 — Methods to be used to verify conformity with the safety requirements and/or measures | 48 |
| Table 5 (<i>continued</i>) | 49 |
| Table F.1 — Coordinates of the 6 microphone positions | 74 |

Foreword

This document (EN 14492-1:2006+A1:2009) has been prepared by Technical Committee CEN/TC 147 “Cranes — Safety”, the secretariat of which is held by BSI.

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 2010, and conflicting national standards shall be withdrawn at the latest by April 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1, approved by CEN on 2009-08-06.

This document supersedes EN 14492-1:2006.

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(s).

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



For the relationship with other European Standards for cranes, see informative Annex G.

This is the first part of the standard “Cranes — Power driven winches and hoists”. The parts of the standard are:

- Part 1: Power driven winches
- Part 2: Power driven hoists

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 harmonized standard to provide one means for power driven winches to conform to the essential health and safety requirements of the Machinery Directive 98/37/EC and the Machinery Directive 2006/42/EC. 

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

This European Standard is a type C standard as stated in EN 12100-1.

When provisions of this type C standard are different from those stated in type A or B standards, the provisions of this type C standard take precedence over the provision of the other standards, for machines that have been designed and built in accordance with the provisions of this type C standard.

1 Scope

This European Standard is applicable to the design, information for use, maintenance and testing of power driven winches for which the prime mover is an electric motor, hydraulic motor, internal combustion motor or pneumatic motor. They are designed for the lifting and lowering of loads which are suspended on hooks or other load handling devices or for the lifting and lowering of loads on inclined planes or the exclusive pulling of loads on planes which are normally horizontal.

NOTE Within the period of utilization, the place of use of a winch may be variable.

As a rule, a winch is used without any additional transport movement.

This European Standard is applicable to the following types of winch:

- a) rope winches;
- b) chain winches;
- c) belt winches, except steel belts used as hoisting media;
- d) traction winches.

These types of winches a) to d) also include the following specific applications:

- vehicle recovery winches;
- winches on boat trailers;
- forestry winches;
- winches for stationary offshore applications;
- winches for drilling applications;
- winches to be used exclusively for the pulling of loads.

NOTE Examples are shown in Annex A.