

ILNAS

Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN 13852-1:2004

Cranes - Offshore cranes - Part 1: General - purpose offshore cranes

Appareils de levage à charge suspendue -
Grues offshore - Partie 1 : Grues offshore
pour usage général

Krane - Offshore-Krane - Teil 1: Offshore-
Krane für allgemeine Verwendung

05/2004

National Foreword

This European Standard EN 13852-1:2004 was adopted as Luxembourgish Standard ILNAS-EN 13852-1:2004.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

<https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html>

THIS PUBLICATION IS COPYRIGHT PROTECTED

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!

ICS 47.020.01; 53.020.20

English version

Cranes - Offshore cranes - Part 1: General - purpose offshore cranes

Appareils de levage - Appareils de levage offshore - Partie 1: Appareils de levage offshore pour usage général

Krane - Offshore Krane - Teil 1: Offshore-Krane für allgemeine Verwendung

This European Standard was approved by CEN on 24 March 2004.

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, 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.....	5
1 Scope	7
2 Normative references	7
3 Terms and definitions	11
4 List of significant hazards	15
5 Safety requirements and/or protective measures	17
5.1 General.....	17
5.2 Structure and mechanisms.....	17
5.2.1 General principles and requirements	17
5.2.2 In service loads	17
5.2.3 Out of service loads	18
5.2.4 Failure mode analysis	18
5.2.5 Load combinations	18
5.3 Equipment and components	18
5.3.1 Electrotechnical equipment.....	18
5.3.2 Non-electrotechnical equipment.....	18
5.3.3 Power requirements	18
5.3.4 Slewing drives.....	19
5.3.5 Slewing bearings	19
5.3.6 Slewing bearing fasteners	19
5.3.7 Winches and brakes	19
5.3.8 Wire rope termination.....	19
5.3.9 Wire rope anchorage	20
5.3.10 Wire ropes	20
5.3.11 Hydraulic cylinders	20
5.3.12 Motion compensators	20
5.3.13 Shock absorbers	21
5.4 Drive systems.....	21
5.4.1 General.....	21
5.4.2 Pneumatic systems	21
5.4.3 Hydraulic systems	21
5.4.4 Electrical systems.....	21
5.4.5 Heave compensation/rope tensioning systems	21
5.5 Health and Safety	22
5.5.1 Control stations - General.....	22
5.5.2 Control cabin	22
5.5.3 Communications	23
5.5.4 Noise reduction	23
5.5.5 Access	24
5.5.6 Guards	24
5.6 Controls, indicators and limiting devices	24
5.6.1 Controls	24
5.6.2 Indicators	25
5.6.3 Limiting devices	26
5.7 Protection systems	27
5.7.1 Overload and over-moment protection	27
5.8 Lifting of personnel	30
5.8.1 General.....	30
5.8.2 Rated capacity.....	31

5.8.3	Secondary brake.....	31
5.8.4	Cylinders	31
5.8.5	Mode selection for personnel lifting.....	31
5.8.6	Personnel rescue.....	31
6	Verification of the safety requirements and/or protective measures	32
6.1	General	32
6.2	Testing	34
6.2.1	General	34
6.2.2	Function test	35
6.2.3	Static test.....	35
6.2.4	Installation test	35
6.2.5	Test acceptance criteria.....	36
6.2.6	Test load	36
7	Information for use.....	37
7.1	Documentation	37
7.2	Operation.....	37
7.2.1	General	37
7.2.2	Checks before starting operation	37
7.2.3	Checks during operation	38
7.2.4	Crane out of service	38
7.2.5	Lifting of personnel (if part of the intended use)	39
7.3	Maintenance	39
7.4	Inspections	40
7.5	Marking	40
7.5.1	Manufacturer's plate	40
7.5.2	Rated capacity information	40
7.5.3	Components.....	40
Annex A (informative) Selection of a suitable set of crane standards for a given application.....	41	
Annex B (normative) Determination of factors	42	
B.1	Calculation of the dynamic coefficient Φ_n by the simplified method	42
B.2	Calculation of dynamic coefficient Φ_n by motion response analysis	43
B.3	Out of plane influences	44
B.3.1	General	44
B.3.2	Offlead load	44
B.3.3	Sidelead load	45
B.3.4	Horizontal load combination of the out-of-plane influences	45
B.4	Hook velocity	46
B.4.1	Hoisting velocity	46
B.4.2	Horizontal hook velocity	46
B.5	Load combinations.....	46
Annex C (normative) Environmental influences	49	
C.1	General	49
C.2	Wind	49
C.2.1	Mean wind velocities	49
C.2.2	Boom stalling	49
C.3	Floating units	50
C.4	Thermal effects	50
C.5	Ice	50
C.6	Stowage	51
C.7	Corrosion protection	51
Annex D (normative) Failure mode analysis	52	
D.1	General	52
D.2	Failure mode charts	52
Annex E (normative) Material selection	54	
E.1	General	54

E.2	Verification of material quality	54
E.3	Forged rings for slewing bearings.....	54
E.4	Slewing bearing fasteners	55
E.5	Welded structures.....	56
E.6	Non-welded components	56
Annex F (informative) Control station instrumentation.....		58
Annex G (normative) Wire rope safety factors.....		59
G.1	General.....	59
G.2	Static safety factors.....	59
G.2.1	Running rigging	59
G.2.2	Standing rigging	59
G.3	Dynamic safety factors	59
G.3.1	Running rigging	59
G.3.2	Standing rigging	60
Annex H (normative) Slewing bearings		61
Annex I (normative) Requirements for brakes		62
Annex J (normative) Ranking of safety systems		63
Annex K (normative) Winches		64
Annex L (informative) Typical general-purpose offshore cranes and terminology		65
Annex M (informative) Excursion envelope for offlead and sidelead		70
Annex N (normative) Noise test code		71
N.1	Introduction	71
N.2	Sound power level determination	71
N.2.1	Basic standard to be used	71
N.2.2	Measurement and calculation procedure.....	71
N.3	Emission sound pressure level determination.....	72
N.3.1	Basic standard to be used	72
N.3.2	Crane operator and microphone positions	72
N.3.3	Specifications concerning the crane operating cabin	72
N.3.4	Specification relating to wind speed	72
N.3.5	Measurement and calculation procedure.....	72
N.4	Operating conditions.....	73
N.4.1	General.....	73
N.4.2	Test procedure	73
N.5	Information on measurement uncertainties.....	75
N.6	Information to be recorded	75
N.7	Information to be reported	75
N.8	Declaration and verification of noise emission values.....	75
N.9	Noise measurement — Test report	76
Annex O (normative) Equipment for use in a hazardous area		80
O.1	General.....	80
O.2	Avoidance or reduction of ignition sources	80
O.3	Electrotechnical equipment.....	80
O.4	Non-electrotechnical equipment.....	80
O.5	Electrostatic discharge	80
Annex ZA (informative) Relationship between this European Standard and the Essential Safety requirements of EU Directive 98/37/EC, amended by Directive 98/79/EC.....		81

Foreword

This document (EN 13852-1:2004) 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 November 2004, and conflicting national standards shall be withdrawn at the latest by November 2004.

Annexes A, F, L and M are informative. Annexes B, C, D, E, G, H, I, J, K, N and O are normative.

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 98/37.

For relationship with EU Directive 98/37, see informative annex ZA, which is an integral part of this document.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This document is a type C standard as stated in EN 1070.

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

When provisions of this type C standard are different from those which are stated in type B standard, the provisions of this C standard take precedence over the provisions of other standards, for machines that have been designed and built according to the provisions of this type C standard.

This document is a harmonized standard to provide one means for general-purpose offshore cranes to conform with the relevant Essential Health and Safety Requirements of the Machinery Directive, as amended.

The standard is one in the series of standards of the CEN/CENELEC work program to produce standards for machine safety. It has been prepared to eliminate or reduce hazards when used in the development design and use of offshore cranes.

This standard is one part of EN 13852. The other part is:

Part 2: Floating Cranes i.e. a crane mounted on a vessel or barge designed for its support and transport, primarily intended for construction/deconstruction operations in a marine environment (This is not a harmonized standard).

1 Scope

This European Standard specifies the requirements for general-purpose offshore cranes including their supporting pedestals or structures.

This standard applies to cranes manufactured after the date of issue of this standard.

This European Standard does not cover:

- a) Fabrication, assembly, dismantling or changing the configuration of the crane;
- b) Lifting accessories, i.e. any item between the hook and the load;
- c) Sub-sea lifting operations;
- d) Design temperature below –20 °C;
- e) Operations at an ambient temperature above 40 °C;
- f) Lifting operations involving more than one crane;
- g) Transportation of the crane;
- h) Loads due to earthquake;
- i) Cranes on seagoing vessels, excluded from the scope of the Machinery Directive.

The significant hazards covered by this European Standard are identified in clause 4.

This standard includes requirements for the lifting of personnel.

Where National Authorities permit the use of a general-purpose offshore crane for the lifting of personnel, the crane would at least need to fulfil the requirements of this standard.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 418	<i>Safety of machinery – Emergency stop equipment, functional aspects – Principles for design</i>
EN 457	<i>Safety of machinery - Auditory danger signals - General requirements, design and testing (ISO 7731:1986, modified)</i>
EN 614-1	<i>Safety of machinery – Ergonomic design principles – Part 1: Terminology and general principles</i>