

NORSOK STANDARD

LIFTING EQUIPMENT OPERATION

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CONTENTS

FOREWORD	3
INTRODUCTION	3
1 SCOPE	4
2 NORMATIVE REFERENCES	4
3 DEFINITIONS AND ABBREVIATIONS	6
3.1 Definitions	6
3.2 Abbreviations	10
4 MANAGEMENT OF LIFTING OPERATIONS	10
4.1 Safe system of work	10
4.2 Control of the lifting operations	11
4.3 Contractual considerations	11
4.4 Planning of the lifting operation	11
4.5 Selection, responsibilities and minimum requirements for personnel	11
5 SAFE USE OF LIFTING EQUIPMENT	14
5.1 Requirements for documentation and marking	14
5.2 Testing	15
5.3 Instruction manuals	15
5.4 Records	15
5.5 Safe use	15
6 INSPECTION, EXAMINATION AND TESTING	17
6.1 General	17
6.2 Regular inspection includes:	17
6.3 Periodical control includes:	17
6.4 Inspection of lifting equipment not in regular use includes:	18
6.5 Inspection at end of design life	18
7 SAFE USE OF LIFTING APPLIANCES	18
7.1 General	18
7.2 Offshore cranes	18
7.3 Overhead travelling cranes/gantry cranes	19
7.4 Wireline cranes/masts	19
7.5 SPM mounted offshore crane (maritimised lorry loading crane)	19
7.6 Winches and Hoists	20
7.7 Tackles	20
7.8 Beam trolleys (permanently mounted)	21
7.9 Fixed load attachment points	21
7.10 Temporary cranes	21
7.11 BOP transporters	22
8 SAFE USE OF LIFTING GEAR	22
8.1 General	22
8.2 Baskets	22
8.3 Chain slings	24
8.4 Wire rope slings	25
8.5 Fibre slings	25

8.6 Shackles	25
8.7 Eyebolts and eyenuts	26
8.8 Wire clamps	26
8.9 Beam clamps and beam trolleys	26
8.10 Turnbuckles	26
8.11 Snatch blocks and sheave blocks	27
8.12 Plate clamps	27
8.13 Offshore containers	28
8.14 Lashings	28
8.15 Personal protective equipment against fall from heights	28
ANNEX A: EXAMPLES OF LIFTING APPLIANCE AND LIFTING GEAR (INFORMATIVE)	30
ANNEX B: EXAMPLE OF DECLARATION OF CONFORMITY AND CERTIFICATE OF APPLICATION FOR LIFTING GEAR (INFORMATIVE)	32
ANNEX C: SIGNALS AND COMMUNICATION FOR SAFE USE OF CRANES (NORMATIVE)	34

FOREWORD

NORSOK (The competitive standing of the Norwegian offshore sector) is the industry initiative to add value, reduce cost and lead time and remove unnecessary activities in offshore field developments and operations.

The NORSOK standards are developed by the Norwegian petroleum industry as a part of the NORSOK initiative and are jointly issued by OLF (The Norwegian Oil Industry Association) and TBL (Federation of Norwegian Engineering Industries). NORSOK standards are administered by NTS (Norwegian Technology Standards Institution).

The purpose of this industry standard is to replace the individual oil company specifications for use in future petroleum industry developments and operations, subject to the individual company's review and application.

The NORSOK standards make extensive references to international standards. Where relevant, the contents of this standard will be used to provide input to the international standardisation process. Subject to implementation into international standards, this NORSOK standard will be withdrawn.

Annex A is informative.
Annex B is informative.
Annex C is normative.

INTRODUCTION

The primary purpose of this standard is to provide owners and users of lifting equipment on an offshore installation with a framework and guidance to enable them to operate lifting equipment in a safe and efficient manner. The purpose of this standard is to focus on safe operation of lifting equipment in order to establish, maintain and further develop an adequate level of safety for personnel, the environment and for physical assets during planning and execution of lifting operations.

While preparing this standard, due considerations have been taken to Norwegian statutory regulations, OLF guidelines, international and European standards and to operating companies internal specifications and procedures concerning the safe use of lifting appliances and lifting gear.

Since this NORSOK standard gives information to many user groups special guidelines for the different groups may need to be established.

1 SCOPE

This NORSOK standard establishes requirements and guidelines for safe operation of lifting equipment in the petroleum activities. It covers lifting appliances and lifting gear used in connection with lifting operations offshore. It does not cover drilling hoisting tools on the drill floor or in the drilling derrick specifically designed and used for drilling operations or in the support of such operations, neither does it cover safe use of lifts, trucks and suspended scaffolding. Examples of lifting equipment covered and not covered by this standard are shown in annex A.

Subjects covered include safe systems of work, i.e., management, planning, operation, selection, inspection/examination/testing and maintenance of lifting appliances and lifting gear as applicable as well as the requirements for competence of crane operators, slingers and signalmen.

2 NORMATIVE REFERENCES

The following regulations and standards include provisions which, through reference in this text, constitute provisions of this NORSOK standard. Latest issue of the references shall be used unless otherwise agreed. Other recognised standards may be used provided it can be shown that they meet or exceed the requirements of the regulations and standards referenced below.

When an EN standard or prEN standard has been published covering the same field of application as a referenced ISO standard, the EN or prEN standard shall apply as provisions of this standard.

Regulations:

Directorate for labour Inspection	Order no. 522	The Supply of Machinery (Safety) Regulations
	Order no. 523	Design of Protective Equipment
	Order no. 524	Minimum Health and Safety Requirements for the Use by Workers of Protective Equipment at the Workplace
Norwegian Petroleum Directorate	YA-003	Regulations relating to systematic follow-up of the Working Environment in the Petroleum Activities

EN Standards:

Chain and Components:

EN 818-1	Short Link Chain for Lifting Purposes - Safety Part 1 : General Conditions of Acceptance
EN 818-2	Short Link Chain For Lifting Purposes - Safety Part 2 : Medium Tolerance Chain for Chain Sling - Grade 8

prEN 818-4	Short Link Chain for Lifting Purposes - Safety Part 4 : Chain Slings - Grade 8
prEN 818-6	Short Link Chain for Lifting Purposes - Safety Part 6 : Chain Slings instruction for Use And Maintenance.
prEN 818-7	Short Link Chain for Lifting Purposes - Safety Part 7 : Fine Tolerance Chain for Serial Hoists, Grade T. Types T, DT, DAT)
prEN 1677-1	Components for Slings - Safety. Forged Steel Components, Grade 8.
prEN 12195-1	Load Restraint Assemblies - Safety - Calculation of Forces
prEN 12195-2	Load Restraint Assemblies - Safety - Web Lashing Equipment made of Man-made Fibres

Fibre slings:

pr. EN 1492-1	Textile slings - Safety - Part 1 : Specification for flat woven Webbing-slings made of Man-made fibres.
pr. EN 1492-2	Textile slings - Safety - Part 1 : Specification for Round-slings made of Man-made Fibres.

Others:

pr EN 12937	Safety Of Machinery - Technical Principles and Specifications for Mobility and for Load Lifting.
EN 1050	Safety of Machinery - Risk Assessment.

ISO Standards:

ISO 7752-4	Cranes - Controls - Layout and Characteristics - Part 4: Jib Cranes.
ISO 4302	Cranes - Wind Load Assessment
ISO 8566-1	Cranes - Cabins - Part 1: General
ISO 8566-5	Cranes Cabins - Part 5: Overhead Travelling Cranes
ISO 7752-1	Lifting Appliances - Controls- Layout - Characteristics - General
ISO 10245-1	Cranes - Limiting and Indicating Devices - General
ISO 9942-1	Cranes - Information Labels - General
ISO 4310	Cranes - Test Code and Procedures
ISO 4309	Wire Ropes - Code of Practice for Examination and Discard
ISO/DIS 1461	Hot dip galvanised Coatings on Fabricated Ferrous Products.
ISO 7531	Wire Rope Slings for general Purposes - Characteristics and Specifications.
ISO 2408	Steel Wire Ropes for general Purposes.
ISO 8792	Wire Rope Sling - Safety Criteria and Inspection Procedures for Use.
ISO 8793	Steel Wire Ropes - Ferrule secured Eye Terminations.
ISO/DIS 12482-1	Condition Monitoring - General
ISO/DIS 99277-1	Cranes Inspection - General
ISO 9926-1	Training of Drivers. Part 1 - General

Norwegian Standards:*Personal Protective Equipment against falls from heights:*

NS-EN 354	Lanyards
NS-EN 358	Working Positioning System
NS-EN 360	Retractable type Fall Arresters
NS-EN 361	Full Body Harness

NS-EN 365 General Requirements for Instruction for Use and Marking
NS-EN 813 Sit harness

Others:

NS-1850 Eyebolts
NS-1851 Eyenuts
NS-EN 292-1 Safety Of Machinery - Basic Concepts - General Principles for Design Part 1
NS-EN 292-2 Safety Of Machinery - Basic Concepts - General Principles for Design Part 2

NORSOK Standard:

R-002 Lifting Equipment

DNV:

DNV CN 2.7-1 Offshore Freight Containers - Design and Certification
DNV CN 2.7-2 Offshore Service Containers - Design and Certification

US Federal Specifications:

RR-C-271 C Shackles. Type IV, Class 6
FF-T-79-B Turnbuckles

OLF Guideline:

022: Recommended Guidelines for Safety Requirements of Hired Equipment

ILO:

152 Convention concerning Occupational Safety

3 DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

Terms and phrases within the scope of this standard not defined herein shall be regarded as defined in the regulations and international codes and standards referred to in this document.

Check

A visual and functional assessment (not a test) of the condition of the crane without dismantling.

Competent checker

Means a person in an enterprise of competence who has sufficient theoretical knowledge, practical experience and understanding of the lifting equipment required to carry out the function satisfactorily.

Competent person

Means a person in an enterprise of competence who has sufficient theoretical knowledge and practical experience to understand the lifting equipment design, its function, to perform calculations, examinations and testing as required and to issue a certificate of application and other certificates prescribed by the authorities.

Detachable lifting equipment

Removable below hook equipment for lifting appliances providing a link between the lifting appliance and the load being lifted and are detachable and easy to separate from the lifting appliance without disassembly. Examples of detachable lifting equipment are shown in annex A.

Dangerous goods

Goods classified and labelled according to the IMDG code.

Enterprise of competence

Unit within the operating companies organisation, another company or institution with adequate competence (theoretical knowledge and practical experience) to understand the design, calculations and operation of lifting equipment and with the ability to carry out the necessary examinations and tests and issue the prescribed certificates.

Examination

Verification that the crane can safely continue in service including a functional test of all safety devices i.e. limiting, indicating equipment, brakes, clutches etc. to verify that they operate within the required tolerances. An examination is more thorough than an inspection.

Fixed load attachment points

Fixed load attachment points are padeyes, lifting beams, foundation for winches, "buckets" for wireline cranes and beams for use of beam clamps.

Inspection

Looking at the crane for defects and checking the operation of the controls, limiting and indicating devices without loading the crane. This is much more than a casual glance but does not normally require any part of the crane to be dismantled.

Lifting appliance

Machine or appliance used for the purpose of lifting goods and materials, or in special cases personnel. Examples of lifting appliances are given in Annex A.

Lifting components

Lifting components are elements not attached to the lifting appliance and placed between the lifting appliance and the load or on the load in order to attach it.

Lifting equipment

The term lifting equipment is used in this standard as a common expression for lifting appliances, lifting gear and lifting components used together or separately. Examples of lifting equipment are given in Annex A.

Lifting gear

Lifting gear means chain, shackles, rings, hooks, swivels, drum fasteners, steel plate clips, blocks, loading pallets and chain, wire or rope slings etc. which do not form parts of the permanent arrangement to the lifting appliance. Examples of lifting gear are given in Annex A.

Man over board boat

Boat which is launched by dedicated davits or by an offshore crane for rapid rescue of personnel.

Offshore crane

Slewing crane permanently mounted on an offshore installation, primarily intended for materials handling to and from supply vessels.

Note: Offshore cranes are cranes used on fixed platforms, Floating Production System (FPS), drilling rigs, floating crane vessels, service vessels (supply boat, diving vessel) etc. where the load, the crane or both are subjected to dynamic stresses imposed from environmental impact caused by a combination of sea and wind forces.

Offshore container

Transport unit for more than one trip for transport of goods or equipment, which shall be handled in open sea - to/from; - installation and ship.

The unit includes equipment for lifting, handling, filling, emptying, cooling and heating.

Note: Offshore containers are categorised in to two types :

1. Offshore freight containers

a. Freight containers for dangerous goods

b. Freight containers for non-dangerous goods not covered by the IMDG-code.

2. Offshore service containers

Offshore containers produced and equipped for a special use, mainly for temporary installation.

Other lifting appliances

Lifting appliances used internally on an installation or ship which are not to be regarded as an offshore crane.

Periodical control

Means a control carried out at fixed intervals by an enterprise of competence using a competent person or on his behalf by a competent checker to perform the work.

Note: The period should normally not be longer than 12 month, but the enterprise of competence can justify a shorter or longer period depending on use and the operational environment.

Periodical inspection

Means a thorough inspection or an examination carried out by an enterprise of competence in order to verify that the state of the lifting equipment is according to statutory regulations and the manufacturers requirements.

Rigging store

An area or areas where lifting gear and portable appliances are stored and a current record of issue and receipts are held.

Safe Working Load

SWL is the maximum load that a sling or lifting accessory is certified to sustain in general service.