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NSAI Standards

Irish Standard
I.S. EN 13001-3-6:2018+A1:2021

Cranes - General design - Part 3-6: Limit states and proof of competence of machinery - Hydraulic cylinders

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This document is based on:	*Published:*
EN 13001-3-6:2018+A1:2021	2021-06-16

This document was published under the authority of the NSAI and comes into effect on:	ICS number:
2021-07-04	23.100.20 53.020.20 NOTE: If blank see CEN/CENELEC cover page

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National Foreword

I.S. EN 13001-3-6:2018+A1:2021 is the adopted Irish version of the European Document EN 13001-3-6:2018+A1:2021, Cranes - General design - Part 3-6: Limit states and proof of competence of machinery - Hydraulic cylinders

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13001-3-6:2018+A1

June 2021

ICS 23.100.20; 53.020.20

Supersedes EN 13001-3-6:2018

English Version

Cranes - General design - Part 3-6: Limit states and proof of competence of machinery - Hydraulic cylinders

Appareils de levage à charge suspendue - Conception générale - Partie 3-6 : États limites et vérification d'aptitude des éléments de mécanismes - Vérins hydrauliques

Krane - Konstruktion allgemein - Teil 3-6: Grenzzustände und Sicherheitsnachweis von Maschinenbauteilen - Hydraulikzylinder

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European foreword

This document (EN 13001-3-6:2018+2021) has been prepared by Technical Committee CEN/TC 147 “Cranes — 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of an identical text or by endorsement, at the latest by December 2021, and conflicting national standards shall be withdrawn at the latest by December 2021.

This document includes Amendment 1 approved by CEN on 21 May 2021.

This document supersedes EN 13001-3-6:2018.

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

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

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Introduction

This European Standard has been prepared to be a harmonized standard to provide one means for the mechanical design and theoretical verification of cranes to conform with the essential health and safety requirements of the Machinery Directive, as amended. This standard also establishes interfaces between the user (purchaser) and the designer, as well as between the designer and the component manufacturer, in order to form a basis for selecting cranes and components.

This European Standard is a type C standard as stated in EN ISO 12100:2010.

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

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1 Scope

[A1] This document is to be used together with the other generic parts of EN 13001 series of standards, see Annex E, as well as pertinent crane type product EN standards, and as such they specify general conditions, requirements and methods to, by design and theoretical verification, prevent mechanical hazards of hydraulic cylinders that are part of the load carrying structures of cranes. Hydraulic piping, hoses and connectors used with the cylinders are not within the scope of this document, as well as cylinders made from other material than carbon steel.

NOTE 1 Specific requirements for particular crane types are given in the appropriate European product standards, see Annex E.

The significant hazardous situations and hazardous events that could result in risks to persons during intended use are identified in Annex F. Clauses 4 to 7 of this document provide requirements and methods to reduce or eliminate these risks: [A1]

a) exceeding the limits of strength (yield, ultimate, fatigue);

b) elastic instability (column buckling).

[A1] NOTE 2 [A1] EN 13001–3–6 deals only with the limit state method in accordance with EN 13001–1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[A1] *deleted text* [A1]

EN 10277-2:2008, *Bright steel products — Technical delivery conditions — Part 2: Steels for general engineering purposes*

[A1] EN 10297-1:2003, *Seamless circular steel tubes for mechanical and general engineering purposes — Technical delivery conditions — Part 1: Non-alloy and alloy steel tubes* [A1]

EN 10305-1:2016, *Steel tubes for precision applications — Technical delivery conditions — Part 1: Seamless cold drawn tubes*

EN 10305-2:2016, *Steel tubes for precision applications — Technical delivery conditions — Part 2: Welded cold drawn tubes*

[A1] EN 13001-1:2015, *Cranes — General design — Part 1: General principles and requirements*

EN 13001-2:2014, *Crane safety — General design — Part 2: Load actions*

EN 13001-3-1:2012+A2:2018, *Cranes — General design — Part 3-1: Limit States and proof competence of steel structure* [A1]

EN ISO 148-1:2016, *Metallic materials — Charpy pendulum impact test — Part 1: Test method (ISO 148-1:2016)*

[A1] EN ISO 683-1:2018, *Heat-treatable steels, alloy steels and free-cutting steels — Part 1: Non-alloy steels for quenching and tempering (ISO 683-1:2016)*

EN ISO 683-2:2018, *Heat-treatable steels, alloy steels and free-cutting steels — Part 2: Alloy steels for quenching and tempering (ISO 683-2:2016)* [A1]

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