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Standards

Standard Recommendation  
S.R. CEN/TS 13001-3-5:2010

# Cranes - General design - Part 3-5: Limit states and proof of competence of forged hooks

## S.R. CEN/TS 13001-3-5:2010

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English Version

## Cranes - General design - Part 3-5: Limit states and proof of competence of forged hooks

Appareils à levage à charge suspendue - Conception générale - Partie 3-5: Etats limites et vérification d'aptitude des crochets forgés

Krane - Konstruktion allgemein - Teil 3-5: Grenzzustände und Sicherheitshinweise von geschmiedeten Haken

This Technical Specification (CEN/TS) was approved by CEN on 31 August 2009 for provisional application.

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# Contents

page

|  |    |
|--|----|
| Foreword.....  | 5  |
| Introduction .....   | 6  |
| 1 Scope .....  | 7  |
| 2 Normative references .....   | 7  |
| 3 Terms and definitions, symbols and abbreviations.....                            | 8  |
| 3.1 Terms and definitions .....  | 8  |
| 3.2 Symbols and abbreviations .....  | 9  |
| 4 General requirements.....  | 11 |
| 4.1 Materials .....  | 11 |
| 4.2 Workmanship .....  | 12 |
| 4.3 Manufacturing tolerances .....   | 13 |
| 4.4 Heat treatment.....  | 13 |
| 4.5 Proof loading.....   | 13 |
| 4.6 Hook body geometry .....   | 13 |
| 4.7 Hook shank machining .....   | 15 |
| 4.8 Nut .....  | 15 |
| 4.9 Hook suspension .....  | 16 |
| 5 Static strength.....   | 16 |
| 5.1 General.....   | 16 |
| 5.2 Vertical design load .....   | 16 |
| 5.3 Horizontal design force .....  | 17 |
| 5.4 Bending moment of the shank .....  | 18 |
| 5.4.1 General.....   | 18 |
| 5.4.2 Bending moment due to horizontal force .....                                 | 18 |
| 5.4.3 Bending moment due to inclination of hook suspension .....                   | 18 |
| 5.4.4 Bending moment due to eccentricity of vertical force.....                    | 20 |
| 5.4.5 Special case for a ramshorn hook .....                                       | 20 |
| 5.4.6 Design bending moment of the shank .....                                     | 21 |
| 5.5 Hook body, design stresses .....   | 21 |
| 5.5.1 Loadings .....   | 21 |
| 5.5.2 Stress calculation methods .....   | 22 |
| 5.5.3 Design stresses .....  | 22 |
| 5.6 Hook shank, design stresses .....  | 23 |
| 5.7 Hook, proof of static strength .....   | 24 |
| 5.7.1 General for hook body and shank.....   | 24 |
| 5.7.2 The use of static limit design force for verification of the hook body ..... | 24 |
| 6 Fatigue strength.....  | 25 |
| 6.1 General.....   | 25 |
| 6.2 Vertical fatigue design force.....   | 25 |
| 6.3 Horizontal fatigue design force .....  | 25 |
| 6.4 Fatigue design bending moment of shank .....                                   | 26 |
| 6.4.1 Bending moment due to horizontal force .....                                 | 26 |
| 6.4.2 Bending moment due to inclination of hook suspension .....                   | 26 |
| 6.4.3 Bending moment due to eccentricity of vertical force.....                    | 26 |
| 6.5 Proof of fatigue strength, hook body.....                                      | 27 |
| 6.5.1 Design stress calculation .....  | 27 |
| 6.5.2 Stress history in general.....   | 27 |

|         |   |    |
|---------|---|----|
| 6.5.3   | Stress history based upon classified duty .....   | 28 |
| 6.5.4   | Limit fatigue design stress .....   | 29 |
| 6.5.5   | Execution of the proof .....  | 30 |
| 6.5.6   | The use of fatigue limit design force for verification of the hook body .....   | 31 |
| 6.6     | Proof of fatigue strength, hook shank .....   | 31 |
| 6.6.1   | General .....   | 31 |
| 6.6.2   | Design stress calculation .....   | 32 |
| 6.6.3   | Applied stress cycles .....   | 32 |
| 6.6.4   | Basic fatigue strength of material .....  | 33 |
| 6.6.5   | Stress concentration effects from geometry .....  | 33 |
| 6.6.6   | Fatigue strength of notched shank .....   | 34 |
| 6.6.7   | Mean stress influence .....   | 35 |
| 6.6.8   | Transformation of stresses to a constant mean stress .....  | 36 |
| 6.6.9   | Stress history parameter in general .....   | 36 |
| 6.6.10  | Stress history parameter based upon classified duty .....   | 37 |
| 6.6.11  | Execution of the proof .....  | 38 |
| 6.7     | Fatigue design of hook shanks for serially produced hooks .....   | 38 |
| 7       | Verification of conformity with the requirements .....  | 39 |
| 7.1     | General .....   | 39 |
| 7.2     | Verification of manufacture .....   | 39 |
| 7.3     | Test loading .....  | 39 |
| 7.4     | Test sampling .....   | 40 |
| 8       | Information for use .....   | 40 |
| 8.1     | Maintenance and inspection .....  | 40 |
| 8.2     | Marking .....   | 41 |
| 8.3     | Safe use .....  | 41 |
| Annex A | (informative) Sets of single hooks .....  | 43 |
| A.1     | A series of single hooks of type RS/RSN, dimensions of forgings .....   | 43 |
| A.2     | A series of single hooks of type RF/RFN, dimensions of forgings .....   | 45 |
| A.3     | A series of single hooks of type B, dimensions of forgings .....  | 47 |
| Annex B | (informative) A series of ramshorn hooks of type RS/RSN and RF/RFN, dimensions of forgings .....                      | 49 |
| Annex C | (normative) Static limit design forces of hook bodies .....   | 51 |
| C.1     | Static limit design forces of hook bodies for hooks of type RS and RF .....   | 51 |
| C.2     | Static limit design forces of hook bodies for a series of hooks of type B, with additional materials .....            | 52 |
| Annex D | (normative) Fatigue limit design forces of hook bodies .....  | 53 |
| D.1     | Fatigue limit design forces of hook bodies for hooks of type RS and RF .....  | 53 |
| D.2     | Fatigue limit design forces of hook bodies for a series of hooks of type B, with additional materials .....           | 54 |
| Annex E | (normative) Hook body calculation and specific spectrum ratio factors .....   | 55 |
| E.1     | Conversion factor for hook body calculation, when classified duty is utilized .....                                   | 55 |
| E.2     | Specific spectrum ratio factors .....   | 56 |
| E.3     | Underlying spectra for the specific spectrum ratio factors .....  | 57 |
| Annex F | (normative) A selection of material qualities for hooks of type RS and RF .....                                       | 60 |
| Annex G | (informative) Sets of hook shank and thread designs .....   | 61 |
| G.1     | A series of hook shank and thread designs, a knuckle thread .....   | 61 |
| G.2     | A series of hook shank and thread designs, a metric thread .....  | 63 |
| G.3     | A series of hook shank and thread designs, a modified metric thread .....   | 65 |
| G.4     | Hook shank and thread designs for hooks of type B .....   | 67 |
| Annex H | (normative) Bending of curved beams .....   | 69 |
| Annex I | (normative) Calculation of hook suspension tilting resistance, articulation by a hinge or a rope reeving system ..... | 72 |

**S.R. CEN/TS 13001-3-5:2010**

**CEN/TS 13001-3-5:2010 (E)**

|   |           |
|---|-----------|
| <b>Annex J (informative) Guidance for the selection of a hook size using the Annexes C to E.....</b>      | <b>76</b> |
| <b>Annex K (normative) Information to be provided by the hook manufacturer.....</b>                       | <b>78</b> |
| <b>Annex L (informative) Selection of a suitable set of crane standards for a given application .....</b> | <b>79</b> |
| <b>Bibliography .....</b>   | <b>80</b> |

## Foreword

This document (CEN/TS 13001-3-5:2010) has been prepared by Technical Committee CEN/TC 147 "Cranes - Safety", the secretariat of which is held by BSI.

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 Technical Specification is one part of the EN 13001 series. The other parts are as follows:

- *Part 1: General principles and requirements*
- *Part 2: Load effects*
- *Part 3-1: Limit states and proof of competence of steel structures*
- *Part 3-2: Limit states and proof of competence of wire ropes in reeving systems*
- *Part 3-3: Limit states and proof of competence of wheel/rail contacts*

According to the CEN/CENELEC International Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, 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 Technical Specification has been prepared to provide a means for the mechanical design and theoretical verification of cranes to conform with essential health and safety requirements. This specification 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 Technical Specification is a type C standard.

The machinery concerned and the extent to which hazards are covered are indicated in the scope of this standard.



## 1 Scope

This Technical Specification should be used together with the other relevant parts of the standard series. As such, they specify general conditions, requirements and methods to prevent hazards in hooks as part of all types of cranes.

This Technical Specification covers the following parts of hooks and types of hooks:

- bodies of any type of point hooks made of steel forgings;
- machined shanks of hooks with a thread/nut suspension.

NOTE 1 Principles of this Technical Specification can be applied to other types of shank hooks and also where stress concentration factors relevant to that shank construction are determined and used. Plate hooks, which are those, assembled of one or several parallel parts of rolled steel plates are not covered in this Technical Specification.

This Technical Specification is applicable to hooks from materials with ultimate strength of no more than 800 N/mm<sup>2</sup> and yield stress of no more than 600 N/mm<sup>2</sup>.

The following is a list of significant hazardous situations and hazardous events that could result in risks to persons during normal use and foreseeable misuse. Clauses 4 to 8 of this document are necessary to reduce or eliminate the risks associated with the following hazards:

- a) Exceeding the limits of strength (yield, ultimate, fatigue);
- b) Exceeding temperature limits of material;
- c) Unintentional disengagement of the load from the hook.

The requirements of this Technical Specification are stated in the main body of the document and are applicable to hook designs in general. The hook body and shank designs listed in Annexes A, B and G are only examples and should not be referred to as requirements of this Technical Specification.

This Technical Specification is applicable to cranes, which are manufactured after the date of approval of this standard by CEN, and serves as a reference base for product standards of particular crane types.

NOTE 2 This CEN/TS 13001-3-5 deals only with the limit state method in accordance with EN 13001-1.

## 2 Normative references

The following referenced documents are indispensable for the application 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.

EN 10002-1, *Metallic materials — Tensile testing — Part 1: Method of test at ambient temperature*

EN 10045-1, *Metallic materials — Charpy impact test — Part 1: Test method*

EN 10025-3:2004, *Hot rolled products of structural steels — Part 3: Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels*

EN 10222-4:1998, *Steel forgings for pressure purposes — Part 4: Weldable fine grain steels with high proof strength*

EN 10228-3:1998, *Non-destructive testing of steel forgings — Part 3: Ultrasonic testing of ferritic or martensitic steel forgings*

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