Lininfästningar för stållinor – Säkerhet –
Del 5: Bygellås

Terminations for steel wire ropes – Safety –
Part 5: U-bolt wire rope grips


Dokumentet består av 21 sidor.

Upplysningar om sakinhållet i standarden lämnas av SIS, Swedish Standards Institute, tel 08 - 555 520 00.

Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.

Postadress: SIS Förlag AB, 118 80 STOCKHOLM
Telefon: 08 - 555 523 10. Telefax: 08 - 555 523 11
E-post: sis.sales@sis.se. Internet: www.sis.se
Terminations for steel wire ropes - Safety - Part 5: U-bolt wire rope grips

Terminaisons pour câbles en acier - Sécurité - Partie 5: Serre-câbles pour terminaisons à œil de câbles en acier

Endverbindungen für Drahtseile aus Stahldraht - Sicherheit - Teil 5: Drahtseilklemmen mit U-förmigem klemmbügel

This European Standard was approved by CEN on 25 March 2003.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>3</td>
</tr>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>1 Scope</td>
<td>4</td>
</tr>
<tr>
<td>2 Normative references</td>
<td>4</td>
</tr>
<tr>
<td>3 Terms and definitions</td>
<td>5</td>
</tr>
<tr>
<td>4 List of hazards</td>
<td>5</td>
</tr>
<tr>
<td>5 Safety requirements and/or measures</td>
<td>6</td>
</tr>
<tr>
<td>6 Verification of safety requirements</td>
<td>7</td>
</tr>
<tr>
<td>7 Information for use</td>
<td>8</td>
</tr>
<tr>
<td>Annex A (informative) Specification for construction and sizes for one design of grip - 1</td>
<td>9</td>
</tr>
<tr>
<td>Annex B (informative) Specification for construction and sizes for one design of grip – 2</td>
<td>13</td>
</tr>
<tr>
<td>Annex ZA (informative) Relationship of this document with EU Directives</td>
<td>18</td>
</tr>
<tr>
<td>Bibliography</td>
<td>19</td>
</tr>
</tbody>
</table>
Foreword

This document (EN 13411-5:2003) has been prepared by Technical Committee CEN /TC 168 "Chains, ropes, webbings, slings and accessories - 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 2003, and conflicting national standards shall be withdrawn at the latest by November 2003.

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 EC Directive(s).

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

Annexes A and B are informative.

This European Standard also contains a Bibliography.

The other Parts of this European Standard are:

- Part 1: Thimbles for steel wire rope slings
- Part 2: Splicing of eyes for wire rope slings
- Part 3: Ferrules and ferrule-securing
- Part 4: Metal and resin socketing
- Part 6: Asymmetric wedge socket
- Part 7: Symmetric wedge socket

This is the first edition of this Part of this European Standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.
Introduction

This European Standard has been prepared to provide a means of conforming with the essential safety requirements of the Machinery Directive and associated EFTA Regulations.

Purchasers ordering to this standard are advised to specify in their purchasing contract that the supplier operates a quality assurance system applicable to the relevant part of this standard (e.g. EN ISO 9001) to ensure themselves that products claimed to comply consistently achieve the required level of quality.

1 Scope

This European Standard specifies the minimum requirements for U-bolt wire rope grips manufactured from ferrous materials and the safe behaviour of eye terminations secured by U-bolt wire rope grips for use as intended by the manufacturer.

Suitable uses include suspending static loads and single use lifting operations which have been assessed by a competent person taking into account appropriate safety factors.

U-bolt wire rope grips are not suitable for use with spiral ropes.

This standard does not cover U-bolt wire rope grips as the primary securing devices on mine hoists, crane hoists or eye terminations for slings for general lifting service.

Examples of grips together with fitting instructions are given in informative annexes A and B.

The hazards covered by this standard are identified in clause 4.

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 1562, Founding – Malleable cast irons


3 Terms and definitions

For the purposes of this European Standard the terms and definitions given in EN 12385-2:2003 and the following apply:

3.1 U-bolt wire rope grip
U-bolt wire rope grip: assembly consisting of a U-bolt, bridge and nuts that allow for two parts of rope to be pressed together when the nuts are tightened.

3.2 Grip-secured eye termination
Grip-secured eye termination: eye termination secured by wire rope grips fitted in accordance with the manufacturer’s instructions.

4 List of hazards

Accidental release of a load, or release of a load due to failure of a wire rope grip puts at risk either directly or indirectly the safety or health of those persons within the danger zone.

Temperature hazard is not covered as in use temperature is limited by the wire rope.

Table 1 contains those hazards that require action to reduce risk identified by risk assessment as being specific and significant for wire rope grips.

<table>
<thead>
<tr>
<th>Hazards identified in annex A of EN 1050:1996</th>
<th>Relevant clause of annex A of EN 292-2:1991</th>
<th>Relevant clause/subclause of this standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Mechanical hazard due to inadequacy of strength</td>
<td>1.3.2 4.1.2.3 4.1.2.5 4.2.4 1.7.3 4.3.1 4.2.4</td>
<td>5 5 6</td>
</tr>
<tr>
<td>1.7 Puncture hazard</td>
<td>1.3</td>
<td>5</td>
</tr>
<tr>
<td>10.4 Errors of fitting hazard</td>
<td>1.5.4</td>
<td>7</td>
</tr>
</tbody>
</table>
5 Safety requirements and/or measures

5.1 Materials

5.1.1 U-bolt
Carbon steel with at least property class 5.8 but not more than property class 8.8 in accordance with EN ISO 898-1.

5.1.2 Bridge
Malleable cast iron grade W40-05 or B35-10 in accordance with EN 1562; or forged non-ageing carbon steel.

5.1.3 Nut
Carbon steel with at least property class 5 in accordance with EN 20898-2 and product grade A in accordance with EN ISO 4759-1.

5.2 Mechanical properties

5.2.1 Grip security/tensile efficiency of grip-secured eye termination
When tested in accordance with 6.2.2 the grip-secured eye termination shall withstand a force of at least 80% of the minimum breaking force of the rope held for 5 minutes without the rope slipping more than 1 mm at the grip-secured eye termination.

5.2.2 Pulsatory fatigue behaviour of grip-secured eye termination
When tested in accordance with 6.2.3 the grip-secured eye termination shall withstand a minimum of 20 000 cycles.

The same grip-secured eye termination subjected to the pulsatory test above shall then be tested in accordance with 6.2.2, after which the grips shall not exhibit any visible cracks, deformation or other damage.