



# SLOVENSKI STANDARD

## SIST EN 1677-3:2002

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**Sestavni deli obes - Varnost - 3. del: Kovani jekleni samozapiralni kavljji -  
Kakovostni razred 8**

Components for slings - Safety - Part 3: Forged steel self-locking hooks - Grade 8

Einzelteile für Anschlagmittel - Sicherheit - Teil 3: Geschmiedete, selbstverriegelnde  
Haken - Güteklasse 8

Accessoires pour élingues - Sécurité - Partie 3: Crochets autobloquants en acier forgé -  
Classe 8

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**Ta slovenski standard je istoveten z: EN 1677-3:2001**

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**ICS:**

53.020.30	Pribor za dvigalno opremo	Accessories for lifting equipment
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**SIST EN 1677-3:2002**

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ICS 53.020.30

English version

## Components for slings - Safety - Part 3: Forged steel self-locking hooks - Grade 8

Accessoires pour élingues - Sécurité - Partie 3: Crochets autobloquants en acier forgé - Classe 8

Einzelteile für Anschlagmittel - Sicherheit - Teil 1: Geschmiedete, selbstverriegelnde Haken - Güteklasse 8

This European Standard was approved by CEN on 11 August 2001.

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 168, "Chains, ropes, webbing, 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 March 2002, and conflicting national standards shall be withdrawn at the latest by March 2002.

This European Standard 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 the relationship with EC Directives, see informative annex ZA, which is an integral part of this standard.

This European Standard is a part of a products standard related to safety for components for slings.

The other Parts of EN 1677 for components for slings are:

- Part 1: Forged steel components - Grade 8
- Part 2: Forged steel lifting hooks with latch - Grade 8
- Part 4: Links - Grade 8
- Part 5: Forged steel lifting hooks with latch - Grade 4
- Part 6: Links - Grade 4

This is the first edition of this Part of EN 1677.

Annexes A and B of this European Standard are informative.

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

## Introduction

This European Standard has been prepared to be a harmonized standard providing one means of complying with the essential safety requirements of the Machinery Directive and associated EFTA regulations.

The hooks covered by this Part of EN 1677 are normally supplied to be part of a sling, but they may also be used for other applications. In such instances it is important that the hook design is checked to ensure its fitness for the intended use.

The extent to which hazards are covered is indicated in the scope. In addition, lifting equipment shall conform as appropriate to EN 292 for hazards that are not covered by this standard.

## 1 Scope

This European Standard specifies requirements for forged steel self-locking lifting hooks of Grade 8 having eye or clevis and pin up to 21,2 t working load limit (WLL), mainly for use in:

- chain slings according to EN 818-4
- steel wire rope slings according to prEN 13414-1
- textile slings according to EN 1492-1, EN 1492-2 .

intended for lifting objects, materials or goods.

The hazards covered by this part of EN 1677 are identified in clause 4.

Annex A gives the bases for calculation of hook dimensions.

Annex B gives an example of a designation systems for hooks of Grade 8.

## 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 292-2:1991/A1:1995	Safety of machinery - Basic concepts, general principles for design - Part 2: Technical principles and specifications (Amendment 1:1995)
EN 818-4	Short link chain for lifting purposes - Safety - Part 4: Chain slings - Grade 8
EN 818-6	Short link chain for lifting purposes - Safety - Part 6: Chain slings - Specification for information for use and maintenance to be provided by the manufacturer
EN 1050:1996	Safety of machinery - Principles for risk assessment
EN 1492-1	Textile slings - Safety - Part 1: Flat woven webbing slings, made of man-made fibres, for general purpose use
EN 1492-2	Textile slings - Safety - Part 2: Roundslings, made of man-made fibres, for general purpose use
EN 1677-1:2000	Components for slings - Safety - Part 1: Forged steel components, Grade 8
prEN 13414-1	Steel wire rope slings - Safety - Part 1: Wire rope slings

## 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 1677-1 apply, together with the following.

### 3.1

#### **self-locking hook:**

hook containing a locking mechanism, capable of being activated by the action of the load which, once correctly closed and locked, can only be opened in the unloaded condition by de-activation of the locking mechanism

## 4 Significant hazards

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

In order to provide the necessary strength and durability of hooks this Part of EN 1677 gives requirements for the design, manufacture and testing to ensure the specified levels of performance are met.

Since failure can be caused by the incorrect choice of grade and specification of hook, this Part of EN 1677 also gives requirements for marking and the manufacturer's certificate.

Errors of fitting can also lead to failure and this Part of EN 1677 contains dimensional requirements to allow correct fit.

Risk of injury due to sharp edges, sharp angles or rough surfaces when handling is also covered by this standard.

Those aspects of safe use associated with good practice are given in EN 818-6.

Table 1 contains those hazards which require action to reduce risk identified by risk assessment as being specific and significant for forged steel self-locking hooks of grade 8.

**Table 1 - Significant hazards and associated requirements**

Hazards identified in accordance with annex A of EN 1050:1996		Relevant clause of annex A of EN 292-2:1991/A1:1995	Relevant clause / subclause of this Part of EN 1677
1.e	Mechanical hazard due to inadequacy of strength	1.3.2 4.1.2.3 4.1.2.5 4.2.4 1.7.3	5 5 5 5 7
1.3	Cutting hazard	1.3.4	5.4
1.8	Friction or abrasion hazard	1.3.4	5.4
15	Errors of fitting hazard	1.5.4	5.2



## 5 Safety requirements

### 5.1 Design

The articulation and relative movement shall be in accordance with 5.1 of EN 1677-1:2000.

NOTE 1 The form of the hook is not specified in detail. For example, a minimum value of dimension  $F$  (see Figure 1) as measured in any direction is specified so that the eye of the hook can accommodate a pin, but the eye of the hook need not be circular.

The form of the upper end shall be either of the eye type or the clevis type as designated in Table 2.

A closed hook in the finished condition shall be able to withstand a bend test in accordance with 6.2.2 (see Figure 2)

The latch shall be able to withstand a force  $f_1$ , of 3000 N or equivalent to 20 % of the working load limit of the hook, whichever is the greater, when applied equidistant between the point of the hook and the centre of rotation of the latch (see Figure 3).

The latch, when the hook is correctly closed and locked, shall be able to withstand a force  $f_2$ , applied laterally to  $f_1$ , as close as practicable to the tip of the latch, of 3000 N or equivalent to 10 % of the working load limit, whichever is the greater.

The locking mechanism shall be activated by the application of the load and shall be replaceable.

The hook shall be able to withstand an impact to the eye or clevis of the latch, without opening, when tested in accordance with 6.2.4. The forces transmitted between the lock and the latch shall not be such that an impact on the latch causes a moment in the direction of rotation that opens the lock.

The surface hardness of the lock shall be greater than that of the latch.

NOTE 2 The hook should be easy to handle and operate.

NOTE 3 The locking mechanism should be protected against ingress and entrapment of dust or other solids.

### 5.2 Dimensions

The principal dimensions of the hook shall conform to Table 3, in which the hook dimensions are related to the working load limit.

NOTE 1 With an eye type hook, connecting devices can be required.

NOTE 2 For direct use in wire rope slings and/or textile slings, dimension  $F$  should be larger than the minimum value given in Table 3.

In addition, the following requirements shall be met:

- a) the actual throat opening  $O$  is the smaller of  $O_1$  and  $O_2$
- b) the actual point height  $B$  shall be at least 65 % of the actual throat opening  $O$  (see Figure 1);
- c) the actual throat opening  $O$  (see Figure 1) shall not exceed 95 % of the actual seat diameter  $D$ ;
- d) in the case of hooks having a clevis, the dimensions of the load pin and the slot on the clevis shall ensure articulation between pin and the chain;
- e) the hook shall be able to close over the maximum diameter of bar  $A$ , as indicated in Figure 1, that can be admitted through the actual throat opening  $O$ ;
- f) the maximum values for  $H$  and  $L$  given in Table 3 shall not apply in the region of the locking mechanism.