



# SLOVENSKI STANDARD

## SIST EN 12195-2:2001

01-maj-2001

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### Naprave za varovanje tovora na cestnih vozilih - Varnost - 2. del: Pleteni zategovalni pasovi iz umetnih vlaken

Load restraint assemblies on road vehicles - Safety - Part 2: Web lashing made from man-made fibres

Ladungssicherungseinrichtungen auf Straßenfahrzeugen -Sicherheit - Teil 2: Zurrgurte aus Chemiefasern

Dispositifs d'arrimage des charges sur véhicules routiers -Sécurité - Partie 2: Sangles en fibres synthétiques

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#### **ICS:**

53.080	Skladiščna oprema	Storage equipment
55.180.99	Drugi standardi v zvezi z distribucijo blaga s prevozom	Other standards related to freight distribution of goods

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EUROPEAN STANDARD

EN 12195-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2000

ICS 53.080; 55.180.00

English version

## Load restraint assemblies on road vehicles - Safety - Part 2: Web lashing made from man-made fibres

Dispositifs d'arrimage des charges sur véhicules routiers -  
Sécurité - Partie 2: Sangles en fibres synthétiques

Ladungssicherungseinrichtungen auf Straßenfahrzeugen -  
Sicherheit - Teil 2: Zurrgurte aus Chemiefasern

This European Standard was approved by CEN on 26 June 2000.

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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<b>Contents</b>	<b>Page</b>
Foreword.....	3
Introduction .....	4
1 Scope .....	4
2 Normative references .....	4
3 Terms and definitions.....	5
4 Hazards .....	9
5 Safety requirements .....	10
6 Verification of safety requirements and type tests .....	13
7 Test report .....	19
8 Marking .....	19
9 Instructions for use .....	20
Annex A (normative) Hazards .....	21
Annex B (normative) Specification for information for use and maintenance of web lashing to be provided by the manufacturer .....	23

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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 May 2001, and conflicting national standards shall be withdrawn at the latest by May 2001.

This European Standard has been prepared under a mandate given by CEN by the European Commission and the European Free Trade Association.

The annexes A and B are normative.

This series EN 12195 "Load restraint assemblies on road vehicles — Safety" consists of the following parts:

Part 1: Calculation of lashing forces

Part 2: Web lashing made from man-made fibres

Part 3: Lashing chains

Part 4: Lashing wire ropes

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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.

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## Introduction

This European Standard has been prepared to be a harmonized standard to provide conformity of the safety requirements for web lashings on the European Market and thus to enable free trade.

The extent to which hazards are covered is indicated in the Scope of the Standard. In addition web lashings for securing of loads on vehicles shall conform as appropriate to EN 292 for hazards which are not covered by this Standard.

## 1 Scope

This Part of EN 12195

- specifies safety requirements for web lashing made from man-made fibres with flat woven webbings for multiple use and of lashing combinations with woven webbings for the safe surface transport of goods on road vehicles, e.g. trucks and trailers which are used on roads or located on vessels or on rail waggons and/or combinations thereof;
- includes only tensioning devices to be hand driven with a maximum hand force of 500 N;
- specifies methods for testing of web lashing for securing of loads;
- deals with the significant hazards which could occur when web lashings are in use as intended and under conditions foreseen by the manufacturer (see clause 4 and Annex A);
- includes composite load restraint assemblies also for the same purpose as above.

## 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 292-1:1991, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology.*

EN 292-2:1991, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles and specifications.*

prEN 12195-1:1995, *Load restraint assemblies on road vehicles — Safety — Part 1: Calculation of lashing forces.*

EN ISO 9001:1994, *Quality systems — Model for quality assurance in design, development, production, installation and servicing (ISO 9001:1994).*

EN ISO 9002:1994, *Quality systems — Model for quality assurance in production, installation and servicing (ISO 9002:1994).*

EN ISO 9003:1994, *Quality systems — Model for quality assurance in final inspection and test (ISO 9003:1994).*

EN 10002-2:1991, *Metallic materials — Tensile testing — Part 2: Verification of the force measuring system of the tensile testing machines.*

ISO 1833:1977, *Textiles — Binary fibre mixtures — Quantitative chemical analysis.*

ISO 2076:1999, *Textiles — Man-made fibres — Generic names.*

ISO 2859-1:1989, *Sampling procedures for inspection by attributes — Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection.*

ISO 9227:1990, *Corrosion tests in artificial atmospheres — Salt spray tests.*

### 3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

#### 3.1

**load restraint assembly**

systems and devices for the securing of loads

#### 3.2

**lashing equipment**

device designed to be attached to the lashing points in order to secure the cargo on a road vehicle; the lashing equipment consists of tensioning elements (e. g. webbing, chain, wire rope), tensioning devices (e. g. wrench, ratchet, spanner, tension jack) and connecting components, if required (e. g. hook, terminal link)

#### 3.3

**web lashing**

means of securing as under 3.2, consisting of a tensioning device or a tension retaining device and flat woven textile webbing with or without end fittings (see figure 1c: two-piece web lashing)

#### 3.4

**flat woven textile webbing**

conventional or shuttleless woven narrow fabric, generally with multiple plies, and the prime function of which is loadbearing; a characteristic of webbing is its narrow fabric selvages

#### 3.5

**tensioning device**

mechanical device inducing and maintaining a tensile force in a load restraint assembly (e. g. ratchets, winches, overcentre buckles; see figure 2, C1 to C5)

#### 3.6

**end fitting**

device connecting the means of web lashing or the tensioning device with the lashing point of the vehicle or the attachment point of the load (see figure 2, D1 to D7)

#### 3.7

**tension force indicator**

device which indicates the force applied to the lashing system by means of the tension devices and movement of the load or elastic deformation of the vehicle body, acting on the lashing equipment

#### 3.8

**single part web lashing**

web lashing which comprises only one flat woven textile webbing and a tensioning device with end fittings (see figure 1b), shown with floating end fittings

#### 3.9

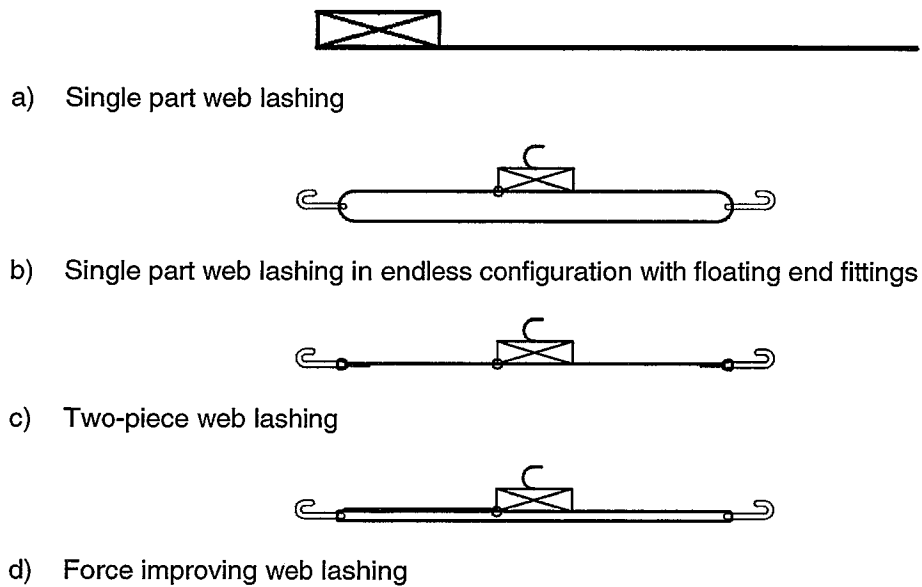
**two-piece web lashing**

web lashing which comprises two woven textile webbings, one with a tensioning device, both with one end fitting (see figure 1c)

#### 3.10

**length  $l_a$**

the length of a one-piece web lashing measured from the free end of the webbing to the outer turning radius of its connection to the tensioning device



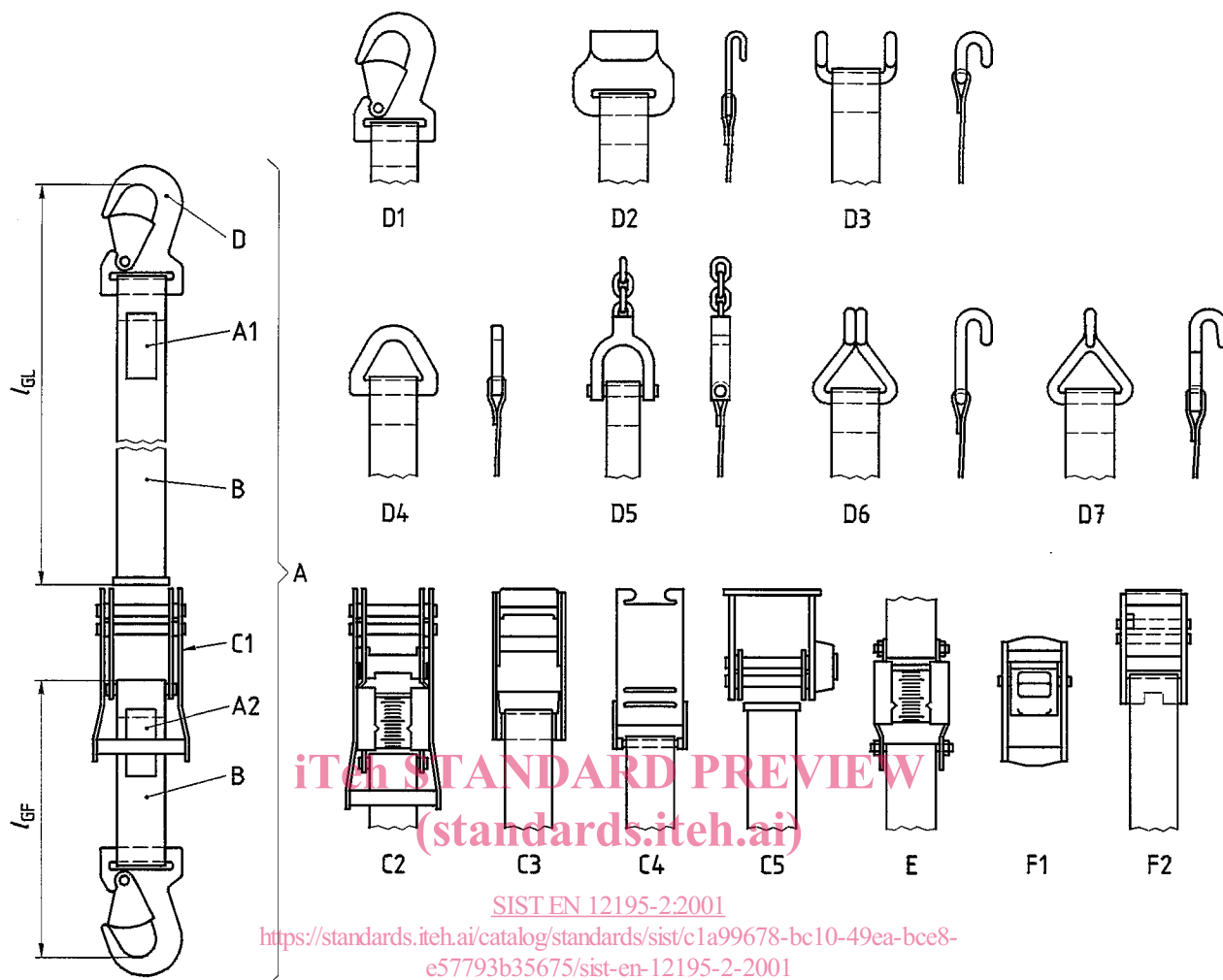
**Figure 1 — Examples of web lashings**

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**Key**

- A complete lashing equipment: web lashing
- A1, A2 marking (label)
- B tensioning element: flat woven textile webbing
- C tensioning devices
- C1 ratchet tensioner
- C2 ratchet tensioner with tension force indicator (see also E)
- C3, C4 overcentre buckle
- C5 lashing winch
- D end fittings
- D1 snap hook, flat, swivel or twisted
- D2 flat hook
- D3 chassis hook
- D4 triangle, designed to engage with an anchorage
- D5 connector to chain
- D6 wire claw hook, double
- D7 wire claw hook, single
- E tension force indicator (see also C2)
- F1 tension retaining device (cambuckle)
- F2 sliding bar buckle

**Figure 2 — Examples of web lashings, including tensioning device C, end fitting D, tension force indicator E and tension retaining device F**

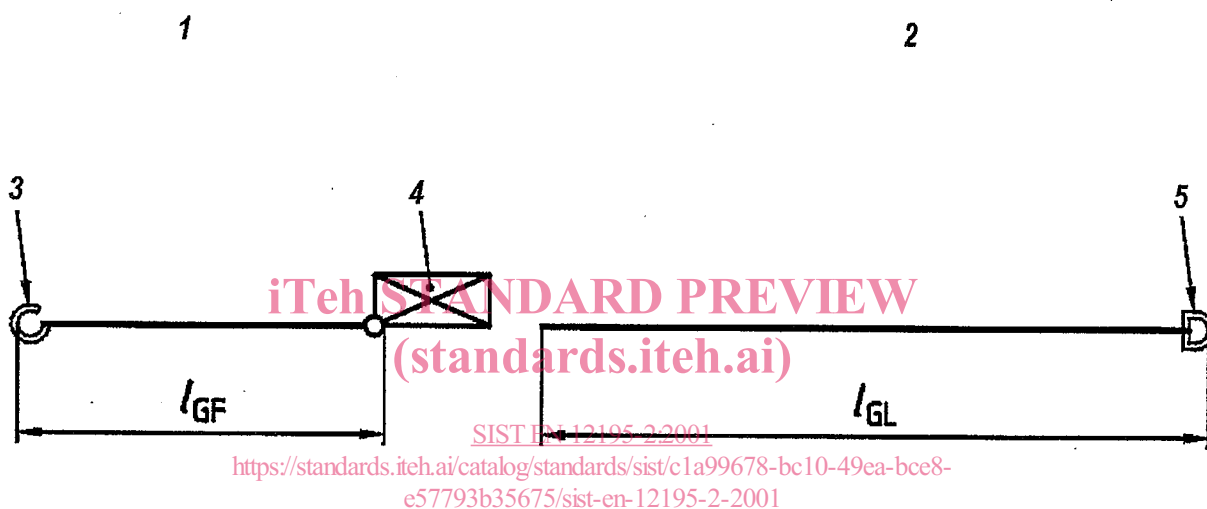
### 3.11 length of a two-piece web lashing

#### 3.11.1 length $l_{GF}$

the length of a fixed end, measured from the force bearing point of the end fitting to the outer turning radius of the connection of the webbing to the tensioning device (see figure 2 and 3)

#### 3.11.2 length $l_{GL}$

the length of an adjustable end, measured from the free end of the webbing to the force bearing point of the end fitting (see figure 2 and 3)



#### Key

- |                  |   |
|------------------|---|
| 1 Fixed end      | 4 Tensioning device or tension retaining device |
| 2 Adjustable end | 5 End fitting                                   |
| 3 End fitting    |   |

Figure 3 — Two-piece web lashing

### 3.12 combined lashing

device for securing a load, consisting of a tensioning device and a textile webbing combined with chains or steel wire ropes with or without end fittings

### 3.13 lashing point

securing device on a vehicle to which a lashing may be directly attached; a lashing point can be e. g. an oval link, a hook, a ring, a lashing shoulder

### 3.14 breaking force BF

maximum force that the web lashing withstands when tested, i. e. complete with ratchet and end fittings

### 3.15 minimum breaking force $BF_{min}$

breaking force for which the web lashing is designed

### 3.16 coefficient of utilisation

ratio of the minimum breaking force  $BF_{min}$  to the lashing capacity LC

**3.17****lashing capacity LC**

maximum force for use in straight pull that a web lashing is designed to sustain in use

**3.18****hand operating force  $H_F$** 

force applied to the handle which creates the tensile force in the web lashing

**3.19****standard hand force  $S_{HF}$** 

hand operating force of 500 N (50 daN on the label)

**3.20****standard tension force  $S_{TF}$** 

residual force after release of the handle of the ratchet

**3.21****competent person**

a designated person, suitably trained qualified by knowledge and practical experience and with the necessary instructions to enable the required tests and examinations to be carried out

NOTE Subclause 4.18 of EN ISO 9002:1994 gives guidance on training.

**3.22****traceability code**

a series of letters and/or numbers marked on a component which enables its manufacturing history, including identity of the webbing, to be traced

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**4 Hazards**

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The general hazards caused by the load or parts of load during improper use of web lashings or the non-use of any load securing devices are given in Annex A.

Hazards described in the following refer to persons who can be endangered directly when handling the web lashings, i. e. during tensioning and unloading.

The evaluation of hazards is carried out according to EN 292-1.

Clause 1 "Scope", 2nd sentence, permits this "for other technical products having similar hazards". This is applicable, since mistakes lead to substantial general hazards (see Annex A) and because the tension in the webbing used with hand-operated web lashings leads to similar or more severe hazards as with mechanically operated lashing winches.

The requirements of clause 5, the tests in clause 6, and the user's instructions have been harmonized such that during proper use of webbings and tensioning devices conforming to this standard these are designed and dimensioned such that the following hazards are taken into account, if they are used in accordance with the manufacturers instructions:

- a) Hazards of being hit by tilting or shifting loads, losing balance or falling during application and tensioning of the lashings due to defective equipment, sudden breakage or malfunction of the tensioning device leading to the sudden absence of the hand reaction force.
- b) Injuries by pinching and shearing, hand and arm injuries during manipulation of tensioning devices due to sharp edges.
- c) Hazards to the unloading personnel due to loads having moved or being tilted during transport because of inadequate securing, malfunction like recoil or breakage of equipment or defective equipment and then which may fall onto the personnel, especially when opening the side-panels.
- d) Hazards due to wrong combinations made up by the operator (combination of lashings or components with different LC).