
Oprema za jadralno padalstvo - Jadralna padala - 1. del: Zahteve in preskusne metode za ugotavljanje trdnosti konstrukcije

Paragliding equipment - Paragliders - Part 1: Requirements and test methods for structural strength

Ausrüstung für das Gleitschirmfliegen - Gleitschirme - Teil 1: Anforderungen und Prüfverfahren an die Baufestigkeit

Équipement pour le parapente - Parapentes - Partie 1: Exigences et méthodes d'essai concernant la résistance de la structure

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Ta slovenski standard je istoveten z: EN 926-1:2015

ICS:

97.220.40	Oprema za športe na prostem in vodne športe	Outdoor and water sports equipment
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SIST EN 926-1:2016**en,fr,de**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 926-1

November 2015

ICS 97.220.40

Supersedes EN 926-1:2006

English Version

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Requirements and test methods for structural strength**

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de la structure

Ausrüstung für das Gleitschirmfliegen - Gleitschirme -
Teil 1: Anforderungen und Prüfverfahren an die
Baufestigkeit

This European Standard was approved by CEN on 26 September 2015.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

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European foreword

This document (EN 926-1:2015) has been prepared by Technical Committee CEN/TC 136 “Sports, playground and recreational equipment”, 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of an identical text or by endorsement, at the latest by May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

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 document supersedes EN 926-1:2006.

In comparison with the previous edition, the following significant changes have been made:

- a) editorial revision;
- b) revision of line strength calculation method;
- c) revision of the definition of the same model and test specimen selection;
- d) deletion of Shock Loading Test Procedure B;
- e) clarification of measurement interval in the sustained loading test;
- f) addition of Manufacturing Record and Marking requirements.

This European Standard is one of a series of standards on equipment for paragliding as follows:

- EN 926-1, *Paragliding equipment — Paragliders — Part 1: Requirements and test methods for structural strength*
- EN 926-2, *Paragliding equipment — Paragliders — Part 2: Requirements and test methods for classifying flight safety characteristics*

Other relevant standards on equipment for paragliding are:

- EN 1651, *Paragliding equipment — Harnesses — Safety requirements and strength tests*
- EN 12491, *Paragliding equipment — Emergency parachutes — Safety requirements and test methods*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 926-1:2015 (E)**Introduction**

The EN 926 series consists of two parts: EN 926-1 details paraglider structural strength requirements and EN 926-2 details paraglider flight tests requirements. Paragliders that have been tested and found to be compliant with both EN 926-1 and EN 926-2 are therefore compliant with the EN 926 series.

The aim of these standards is to enhance safety thus eliminating paragliders which display unacceptable behaviour in given situations on the basis of recognized tests set in these two standards.

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1 Scope

This European Standard is applicable to paragliders as defined in 2.1.

This part of EN 926 specifies requirements and test methods for the resistance of a paraglider to static and dynamic loads and sets the minimum strength threshold for its qualification.

2 Terms and definitions

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

2.1

paraglider

ultra-light glider with no primary rigid structure, for which take-off and landing are on foot, with the pilot (and potentially one passenger) carried in a harness (or harnesses) connected to the wing

2.2

model of paraglider

paragliders of different sizes of a given design are considered to be the same model when fulfilling the following criteria:

- a) the different sizes have been obtained by using a uniform scale factor;
- b) for all sizes identical materials are used;
- c) the way materials are processed is identical for all sizes

2.3

identically constructed lines

lines where the only elements that differ are the finished line length and/or cosmetic colour

2.4

main control lines

entire line systems that terminate at the two primary control handles

2.5

significant damage

rupture of any of main load bearing component of the structure

3 Requirements

3.1 Shock loading

When tested according to 4.4, a visual inspection of the wing shall not show significant damage.

3.2 Sustained loading

When tested according to 4.5 the wing shall sustain 4.5.2. 1) or 4.5.2 2).

3.3 Breaking strength of the suspension lines

The lines shall be tested according to 4.6. If identically constructed lines have already been tested, then the result may be used.

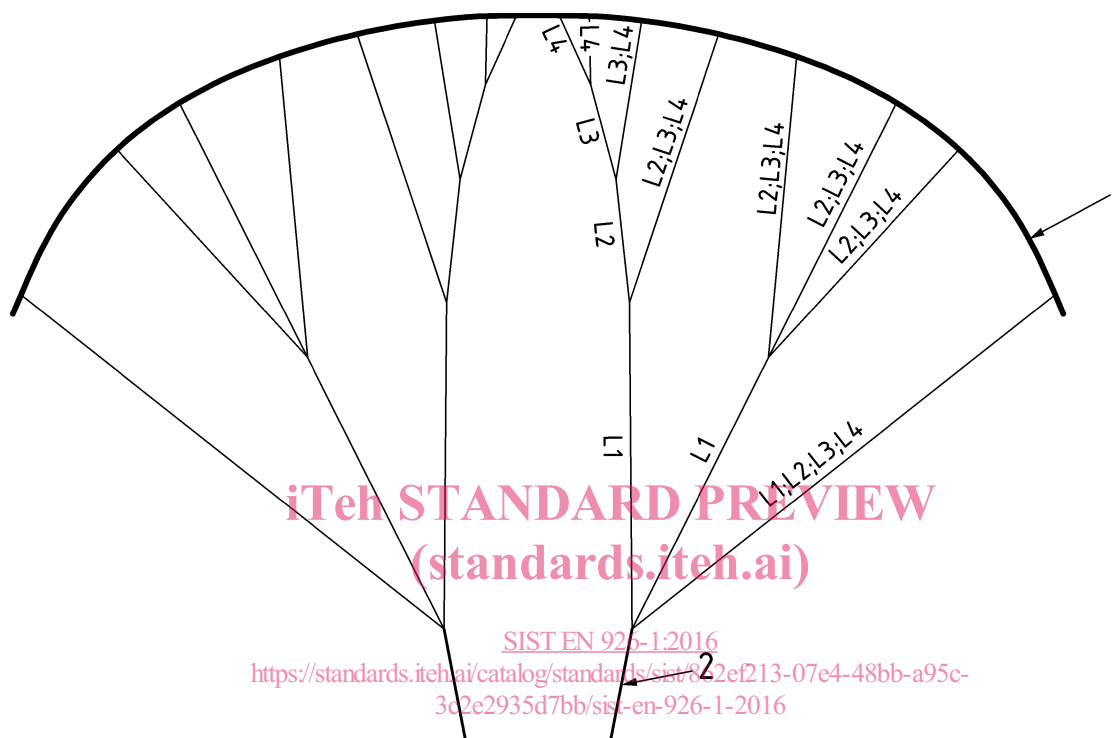
The minimum breaking strength of any line shall be greater than 200 N. The first level is defined as the lines attached to the risers.

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The sum of strength after bending test of the lines of the first level shall exceed the greater of $14 \times g \times [\text{max weight in flight}]$ or 14 000 N ($g = 9,81 \text{ m/s}^2$).

For each level the same calculation is performed. The result shall exceed the greater of $14 \times g \times [\text{max weight in flight}]$ or 14 000 N ($g = 9,81 \text{ m/s}^2$).

Subsequent levels (as shown in Figure 1) are defined by each further line junction. If a line is directly attached to the wing (i.e. no line junction above it), its strength shall also be used during the calculation of the strength of each of the level(s) above it. An example calculation is given in Annex A.



Key

- 1 Wing
- 2 Risers
- L1 Level 1
- L2 Level 2
- L3 Level 3
- L4 Level 4

Figure 1 — Example of line rigging

3.4 Breaking strength of the main control lines

The lines shall be tested according to 4.6. If identically constructed lines have already been tested, then the result may be used.

The sum of the strength of the lines of each level shall exceed 1 500 N (i.e. $2 \times 750 \text{ N}$).

The minimum breaking strength of any line shall be greater than 200 N.

The first level is defined as the lines attached to the main control handle(s) including the control handle and the attachment of the line to the handle.

When a control handle is connected to a control line in the manner described in the user manual, the connection between the control handle and the first level of line shall have a minimum breaking strength of 750 N.

4 Test methods

4.1 Apparatus

4.1.1 Weak link

The weak link shall be chosen for instantaneous break at a load defined in Table 1 according to the total weight in flight:

Table 1 — Selection of weak link break loads

Total weight in flight (kg)	< 120	120 to 180	180 to 240	≥ 240
Break load of the weak link (N)	8 000	10 000	12 000	14 000

The use of weak links with a tolerance of $\pm 5\%$ is allowed. Weak links shall be protected against torsional load as recommended by the manufacturer.

For each additional 60 kg value above 240 kg total weight in flight, the break load of the weak link shall be increased by 2 000 N.

Where individual weak links of the specified values are not available, it is permissible to pair in parallel two identical weak links of half of the required value.

4.1.2 Cable

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The shock test cable shall meet the following requirements:

- length: 125 m ($\pm 1\%$);
- minimum breaking strength: ≥ 50 kN;
- the elastic elongation at 5 kN shall be between 11,8 cm and 14,4 cm.

NOTE The elastic elongation is equal to 1,05 per thousand ($\pm 10\%$) at 5 kN.

4.1.3 Electronic sensor

An electronic sensor equipped with an electronic strain gauge for measuring the force (sampling a minimum of 10 times per second) is required for 4.5.

4.1.4 Measurement circuit

With a graph clearly showing the load (N) against time (s).

4.1.5 Video recording equipment

Video recording equipment shall be used to record the overall behaviour of the glider during the tests. More than one camera may be used.