



'LOAD SHARING DEVICES'

Climbing and Mountaineering Equipment

UIAA 130

Foreword

This UIAA Standard is only published in the English language version, which is the master text. For any validations in translation, the UIAA Safety Commission should be contacted via the UIAA Office in Bern, Switzerland.

UIAA Standards are the only 'globally recognized' standards for mountaineering equipment.

The UIAA Standards are reviewed at intervals to see whether they meet the latest technical requirements and revised if necessary.

The UIAA invites manufacturers of mountaineering and climbing equipment worldwide to become members of the UIAA Safety Commission as Safety Label Holders. Members can participate in discussions on standard requirements, test methods and revisions thereof (see the "General Regulations for the UIAA Safety Label").

A [complete list of UIAA Standards](#) for mountaineering and climbing equipment can be found on the UIAA website.

This standard has been created and updated based on scientific research coordinated and funded by UIAA, as a service to all mountaineers.

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Copyright and Version Management

This document was first published in English. The English master text is decisive in any conflict of interpretation. For any validations in translation, the UIAA should be contacted via the UIAA office in Bern, Switzerland.

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The version number refers to the latest revision, e.g. V4 is the fourth change to the document. The last update is the date of this latest version.

1. General Remarks on the UIAA Trademark and UIAA Label

- 1.1. The UIAA Trademark (see section 10.1.) is copyright protected internationally. The UIAA Label is only given to items of mountaineering and climbing equipment upon approval of prospective label holder's application from the UIAA.
- 1.2. The procedure to be followed by a manufacturer, when applying for a UIAA Label, is laid down in the "General Regulations for the UIAA Safety Label Certification"

2. Scope

This standard specifies safety requirements and test methods for all types of load sharing devices commonly used in mountaineering (climbing and associated activities) and rescue.

This standard does not cover the specific requirements of devices intended for use in slackline applications.

3. Terms and definitions

3.1 Load Sharing Device (LSD)

Apparatus integrating at least 3 possible connections intended to distribute load.

Note: some types of LSD are known as 'rigging plates'

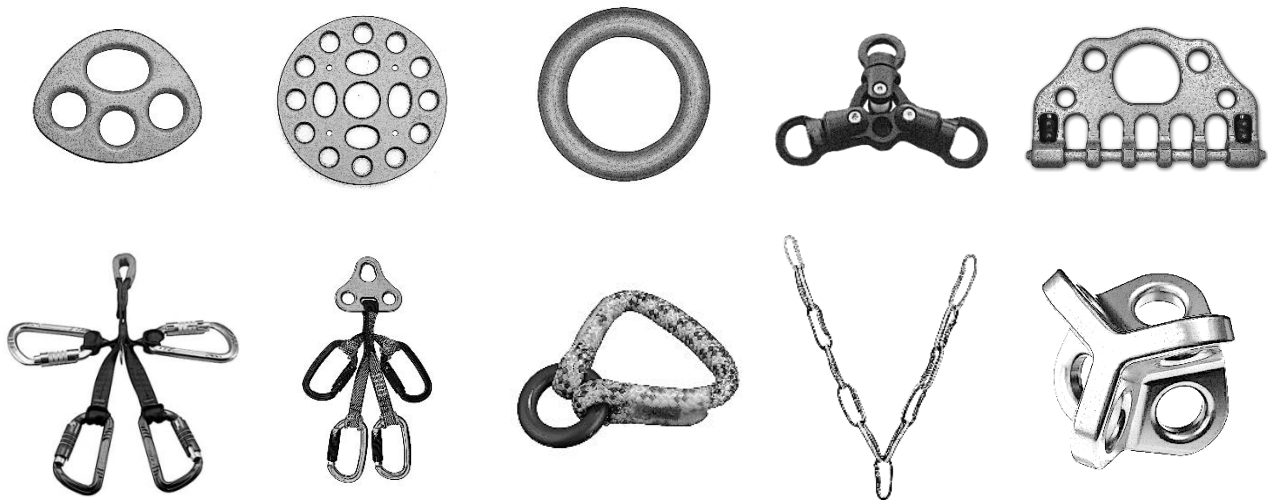


Figure 1: Examples of LSD

3.2 "3-way loading"

Application of equal loading in three different directions

3.3 Weakest direction

Direction or method of loading which, as defined by the manufacturer, supports the lowest minimum strength defined by the manufacturer.

4. Design

- 4.1 It shall not be possible for an LSD to become detached unintentionally. If any part can be opened or removed, it shall be designed such that it can only be done after performing at least 3 separate, consecutive and deliberate manual actions or by the use of a tool.
- 4.2 Where an LSD includes more than one element and for an LSD with elements that can be adjusted, the design shall be such that those elements cannot appear to be positively locked together when they are incorrectly assembled or adjusted.
- 4.3 Where an LSD includes another function (connector, rope clamp, etc.) it shall also comply to the appropriate other applicable text/standard, if existing.
- 4.4 Where stitching is used to provide safety and strength (e.g. in joints) it shall be possible to inspect it and at least 50% of the stitching shall contrast with the textile element in colour or surface appearance.
- 4.5 All edges of an LSD shall be free of burrs and sharp edges.

Dimensions in millimetres

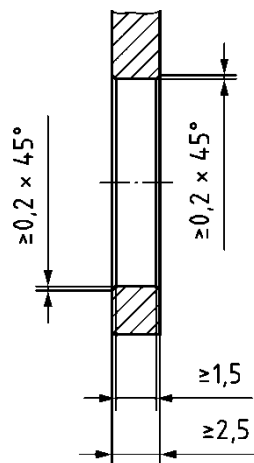


Figure 2: Attachment point eye dimensions

The internal edges of the hole(s) shall be rounded with a radius larger than 0,2 mm or have a chamfer larger than 0,2 mm \times 45°

- 4.6 Where the manufacturer recommends direct attachment between a textile component (e.g. a rope or a sling) and the LSD, then the cross-sectional profile of any metallic load bearing surface shall conform to figure 3.

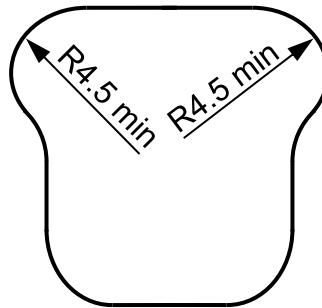


Figure 3: Cross-sectional profile

5. Stability of tape

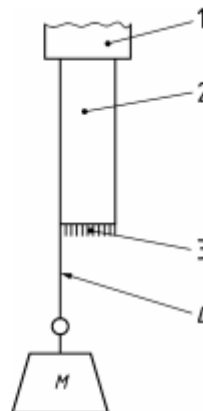
5.1 Requirement

If the LSD is made of woven tape not conforming to UIAA 103, the weft yarn of the tape shall not be released from the tape sample.

5.2 Test method

5.2.1 Preparation

Cut a sample of at least 200 mm length of tape without the influence of heat. Extract the weft yarn on the ends to allow the attachment of a test mass of (150 ± 5) g (see Figure 4).



Key

1	clamp
2	tape
3	warp yarns
4	weft yarns
<i>M</i>	(150 ± 5) g

Figure 4: Test Method for stability

5.2.2 Test

Fix test sample in a vertical orientation. Apply, without shock, the mass to the weft yarn of the lower side for (60 ± 50) s. The mass shall stay in a stable position, then release the mass and check whether the weft yarn has not unraveled. Repeat the test on the weft yarn of the other end of the tape.

6. Static tests

6.1 Requirement

The UIAA test lab shall take into account the documentation supplied by the manufacturer (instructions for use for authorized loading situations and for strength values claimed by the manufacturer, risk analysis, technical documentation, etc.) in order to determine the weakest configuration(s) to test.

When tested in accordance with 6.2 the LSD shall withstand the strength value marked on the LSD but not less than 20kN for an all-metal LSD and not less than 22kN for an LSD with non-metallic structural elements. The LSD shall not release the load.

After the test, permanent deformation of any part of the LSD shall not affect the safety of the user (e.g. possibility to detach connectors from the LSD, possibility of rotation of a swivel, etc.)

6.2 Test method

Figure 5: Examples of configurations of loading tests:

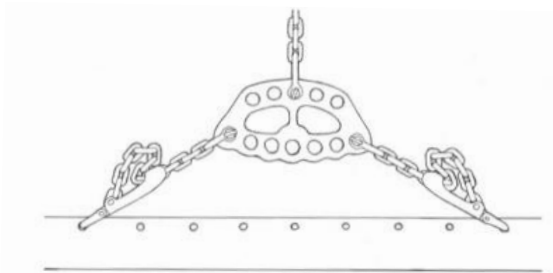


Figure 5a: to achieve 3-way loading configuration



Figure 5b: to achieve a 2-way loading configuration on one hole

Note: most designs can be tested by assessing the weakest axis, but special designs require other axis tests.

Tested configurations (including angles used for ≥ 3 ways of loading if applicable) shall be included in UIAA laboratory test report.

Install the LSD in the test apparatus, attached as described in the instructions and information supplied by the manufacturer.

Use pins of $10\text{mm} \pm 0,1\text{mm}$ and with a mean roughness value, R_a , not exceeding $0,8 \mu\text{m}$ and a peak to valley height, R_{max} , not exceeding $6,3 \mu\text{m}$.

If the LSD includes non-metallic structural elements, determine the loading speed, v , as a function of the free length of the test sample, using Formula:

$$v = (0,5 \pm 0,1) \text{ min} \times l$$

where:

v is the loading speed in millimetres per minute;

l is the free length in millimetres of the test sample overall laid out in the flat.

If the LSD has only metallic load bearing elements, the rate of loading shall be of 20 mm/min to 50 mm/min.

Maintain the force applied for (3 +0,1/-0) min and check that the requirements are met.

If relevant, repeat the procedure for each configuration identified above.

A new sample may be used for each test.

7. Marking

The LSD shall be clearly and indelibly marked with the following data:

- a. Name of the manufacturer or its authorized representative.
- b. Identification of the model if several models are marketed by the same manufacturer.
- c. Month/Year of fabrication for an LSD including non metallic structural elements.
- d. One strength value, which corresponds to the weakest direction of use, claimed by the manufacturer, marked in 'kN' (whole number).

Note: If the device also conforms to another applicable text (e.g. connector standard, etc.), the strength value shall be clearly identified with its use as an LSD.

- e. Graphical symbol (see figure 6), which instructs the user to read the information supplied by the manufacturer.



Figure 6: Operator's manual (according to ISO 7000, Symbol No. 1641)

8. Information to be supplied by the manufacturer

The "information to be supplied" shall be given in Standard English and, if required, in the official language(s) of the country in which the product is made available on the market. As an alternative to a printed form, the information may be provided via an electronic or other data storage format link (e.g. a QR code) allowing the downloading of the information. The information link shall be preceded or surmounted by an icon showing an open booklet; the information link and icon may be directly printed on the product in a clearly visible and accessible place and contain at least the following:

- a. The name of the manufacturer or its representative
- b. The meaning of any markings on the product
- c. The weakest direction and its related strength value
- d. How to use the product (e.g. installation, connection to an anchor point...). If the manufacturer shows example of load sharing with angles, information about the resulting forces
- e. Hazards related to factors and situations that could affect the performances of the product (e.g. sharp edges, knots ...)

- f. How to choose and install other components for use in the system (e.g. connectors, directly attached textile component ...)
- g. How to maintain/service the product, on the effects of chemical reagents and how to disinfect the product without adverse effect
- h. The lifespan of the product and/or how to assess it
- i. If applicable, influence of wet and icy conditions
- j. Influence of storage and ageing due to use

9. Demonstrating that Requirements are met

The safety requirements shall be satisfied by either

- a. test report from a UIAA-approved test laboratory, or
- b. test report from a test laboratory acceptable to an EU Notified Body.

10. Attachment of the UIAA Label

10.1 For any model of mountaineering equipment, which has been awarded the UIAA Label, the UIAA recommends that the UIAA Trademark (see below) or the four letters "UIAA" be marked clearly and indelibly on each item sold in accordance with the branding guidelines specified in the "General regulations for UIAA Safety Label".



Figure 7: UIAA trademark logo

10.2 In addition, the UIAA Trademark or the four letters "UIAA" may be included in the instructions for use and/or on a swing ticket as well as in catalogues and other publications of the manufacturer. In the last case, the illustration and/or the text must clearly apply only to the equipment which has been awarded the UIAA Label.

UIAA 130 Load Sharing Devices revision history	
Date	Comments