SLOVENSKI STANDARD
SIST EN 12278:2000

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Gorniška oprema - Škripci - Varnostne zahteve in preskusne metode

Mountaineering equipment - Pulleys - Safety requirements and test methods

Bergsteigerausrüstung - Seilrollen - Sicherheitstechnische Anforderungen und Prüfverfahren

Equipement d'alpinisme et d'escalade - Poulies - Exigences de sécurité et méthodes d'essai

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97.220.40	Oprema za športe na prostem in vodne športe	Outdoor and water sports equipment

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English version

Mountaineering equipment - Pulleys - Safety requirements and test methods

Equipement d'alpinisme et d'escalade - Poulies - Exigences de sécurité et méthodes d'essai

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This European Standard was approved by CEN on 1 May 1998.

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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 Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 136 "Sports, playground and other 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of an identical text or by endorsement, at the latest by November 1998, and conflicting national standards shall be withdrawn at the latest by November 1998.

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 EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this standard.

This standard is one of a series of standards for mountaineering equipment, see annex A.

Annexes A and ZA of this European Standard are for information only.

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.

1 Scope

This standard specifies safety requirements and test methods for pulleys for use in mountaineering including climbing.

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.

EN 564
Mountaineering equipment – Accessory cord – Safety requirements and test methods

EN 892
Mountaineering equipment – Dynamic mountaineering ropes – Safety requirements and test methods

prEN 12275
Mounaineering equipment – Connectors – Safety requirements and test methods

3 Definitions

For the purposes of this standard, the following definitions apply:

3.1 pulley: One or more sheaves mounted in a block or a body, which can be used to link a rope (in accordance with EN 892) or an accessory cord (in accordance with EN 564) to a connector (in accordance with prEN 12275) to safeguard a mountaineer, and which reduces the friction while the rope or accessory cord is moving under load.

3.2 sheave: Grooved wheel to locate the rope.

4 Safety requirements

4.1 Design

4.1.1 Pulleys shall have a means for attachment of a connector which is large enough to accomodate a pin of diameter 12 mm. Testing in accordance with 5.3.1.1.

4.1.2 The pulley, particularly its sheaves, shall be large enough to accomodate a rope or an accessory cord of such diameter as marked on the pulley. Testing in accordance with 5.3.1.2.

4.1.3 All edges of the pulley, which come into contact with fingers, shall be free from burrs.

4.1.4 If any sheave axle is secured by nuts or screws, when tested in accordance with 5.3.1.4, the nuts and/or screws shall not come undone by more than one complete turn.

4.2 Strength

4.2.1 When tested in accordance with 5.3.2, the sheave(s) shall be capable of rotation in either direction under a force of 2 kN, applied to each sheave individually.

4.2.2 When tested in accordance with 5.3.2, the pulley shall not show signs of damage or deformation, which could affect its function.

4.2.3 When tested in accordance with 5.3.2, the pulley shall be capable of withstanding a static force of at least 12 kN, applied to each sheave individually, without completely releasing either the rope or the steel U-bar.

5 Test methods

5.1 Sampling

For the tests the number of test samples required is determined by the number of sheaves, their size and the material from which they are made to ensure that each size/material-combination is tested.

5.2 Apparatus

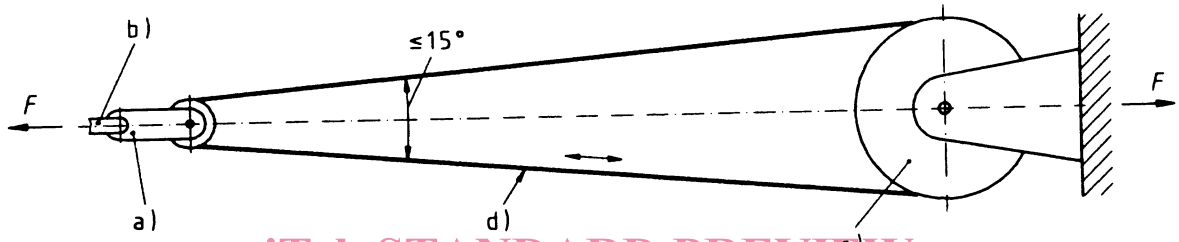
5.2.1 Strength test apparatus according to figure 1 transmitting the force F

– by means of the U-bar in accordance with figure 2 in the attachment point of the pulley and

– with a rope with nominal diameter equal to the maximum diameter on the pulley threaded through the sheaves of the pulley according to the instructions for use.

5.2.2 Pin of (12 ± 0,01) mm diameter.

5.2.3 Pin of diameter (1 ± 0,01) mm greater than the maximum diameter marked on the pulley.



a) test sample

b) steel U-bar

c) freely revolving sheave

d) rope

Figure 1: Strength test apparatus

Dimensions in millimetres

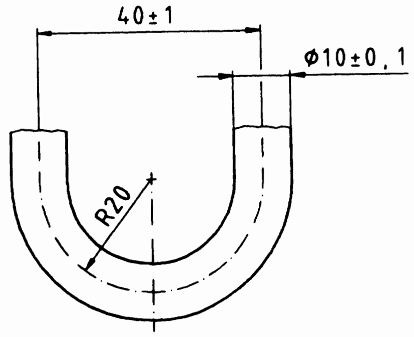


Figure 2: Steel U-bar

5.3 Procedure

5.3.1 Design

5.3.1.1 Test the means for attachment in accordance with 4.1.1, with the pin in accordance with 5.2.2.

5.3.1.2 Test each sheave in accordance with 4.1.2, with the pin in accordance with 5.2.3. The pin shall touch the bottom of the groove (see figure 3).

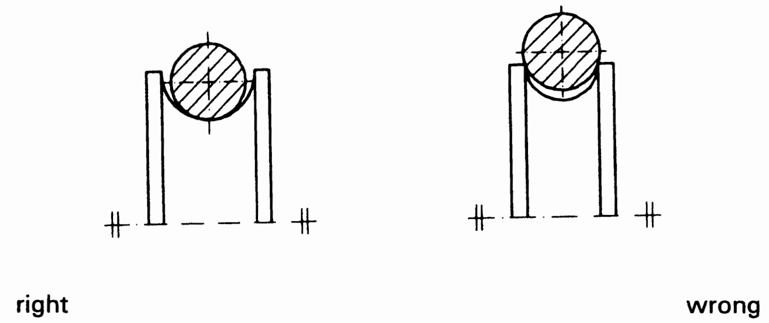


Figure 3: Testing the groove

5.3.1.3 Check by visual examination and handling that the requirements in accordance with 4.1.3 are met.

5.3.1.4 If any sheave axle is secured by nuts or screws in accordance with 4.1.4, apply a torque up to the value in table 1, in the unlocking direction and check that the nuts or screws respectively do not come undone by more than one complete turn.

Table 1: Torque for testing the locking system

Screw dimensions	Torque Nm
M4	4
M5	8
M6	13
M8	33
M10	65
M12	110

5.3.2 Determination of strength

5.3.2.1 Each sheave shall be tested separately on a different test sample in accordance with 5.1.

5.3.2.2 Carry out the strength test at a temperature of (23 ± 5) °C.

5.3.2.3 Rate of loading (100 ± 50) mm/min.

5.3.2.4 Under a force of (2 ± 0,05) kN pull the rope such that the sheave of the test sample rotates continuously ten times in each direction, or until it ceases to rotate.

5.3.2.5 After the test according to 5.3.2.4, check by visual examination that the requirements according to 4.2.2 are met.

5.3.2.6 After the examination according to 5.3.2.5, increase the force until breakage and check that the requirements according to 4.2.3 are met.

5.3.2.7 Repeat the test sequence in accordance with 5.3.2.2 to 5.3.2.6 for each sheave with different size/material-combination or different materials on different test samples.

6 Information to be supplied

a) the name or trademark of the manufacturer, importer or supplier;

b) the number if this standard EN 12278;

c) the model (if more than one model is available);

d) the meaning of any marks on the product;

e) on the use of the product, especially the maximum diameter of the rope with which the pulley can be used, on how to pass the rope through the pulleys;

f) the maximum strength in kN guaranteed by the manufacturer;

g) the maximum load while the sheave is moving;

h) on how to choose other components for use in the system;