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Varnostne vezi za alpske smuči - Zahteve in preskusne metode

Alpine ski-bindings - Requirements and test methods

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Fixations de skis alpins -- Exigences et méthodes d'essai

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Fourth edition
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**Alpine ski-bindings — Requirements
and test methods**

Fixations de skis alpins — Exigences et méthodes d'essai

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 83, *Sports and recreational equipment*, Subcommittee SC 4, *Snowsports equipment*.

This fourth edition ~~cancels and replaces the third edition (ISO 9462:2006 and ISO 9462:2006/Amd.1:2009)~~, which has been technically revised with the following changes:

- [Clause 3](#) new definitions [3.5](#), [3.6](#) and [3.7](#);
- deletion of Table 1 “Test ski characteristics”;
- modification of [5.1](#);
- addition of new [6.3.3](#) “Release with ski deflection”;
- new [Table 3](#) “Deflection of ski”;
- addition of new [6.3.4](#) “Release under combined loading”;
- in [6.6.2](#) deletion of ski lengths;
- addition of new [Clause 7](#) “Marking”;
- addition of new informative [Annex A](#) “Additional information to conduct tests according to test method A”;
- addition of new informative [Annex B](#) “Fixtures and load configurations necessary for conducting tests using test method B”.

Alpine ski-bindings — Requirements and test methods

1 Scope

This International Standard specifies the main characteristics of ski-bindings and describes, as an example, the test methods A and B.

This International Standard applies to ski-bindings for alpine skiing for children, juniors, and adults.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5355, *Alpine ski-boots — Requirements and test methods*

ISO 8061, *Alpine ski-bindings — Selection of release torque values*

ISO 9465, *Alpine ski-bindings — Lateral release under impact loading — Test method*

ISO 9838, *Alpine and touring ski-bindings — Test soles for ski-binding tests*

ISO 11087, *Alpine ski-bindings — Retention devices — Requirements and test methods*

3 Terms and definitions

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

3.1

alpine ski-binding

system to ensure firm connection between boot and ski, fixing the heel low for downhill skiing

Note 1 to entry: The system releases the boot from the ski when certain loads reach preset values.

3.2

release

detachment of the boot from the ski by release of the mechanism that ensures the connection between boot and ski

Note 1 to entry: This release is only considered effective when all the loads due to the boot/ski connection have dropped to values which present no danger to the skier.

3.3

release values

maximum values of torques M_z and M_y caused at the boot/ski connection by the two movements of torsion and forward bending

Note 1 to entry: For the torques M_z and M_y , see Figure 1.

Note 2 to entry: These values are generally adjustable on current bindings which have a scale and an indicator displaying the setting level.

Note 3 to entry: In the present state of the art, bindings are designed at least to release in torsion ($\pm M_z$) and in forward bending ($\pm M_y$).

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3.4 reference value

value, adjusted after a series of tests, used as a basis of comparison to evaluate the behaviour of the binding during the tests

Note 1 to entry: See 6.3.1

3.5 combined loading

loading of the sole or ski in several directions at the same time, where one of the loads is the torque M_z progressively applied to the sole until the binding releases

Note 1 to entry: Each of the load combinations simulates a given situation, chosen within an infinite field of possibilities and simplified for the purpose of the tests. The main simplification being that the loads applied additionally to the release torque M_z are held constant in value and direction during all the release process.

Note 2 to entry: For the loading, see Figure 1 and Table 1.

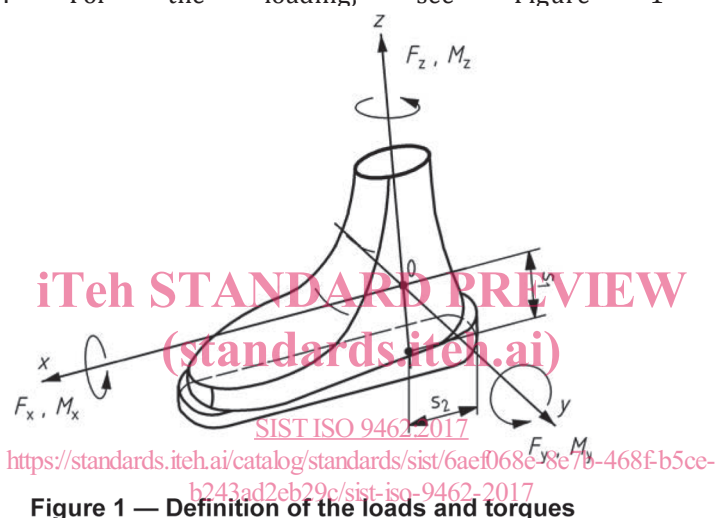


Figure 1 — Definition of the loads and torques

Table 1 — Coordinates of reference point 0

Dimensions in millimetres

| | Type of binding | | |
|-------|-----------------|--------------|--------------|
| | C (see 3.8) | CA (see 3.9) | A (see 3.10) |
| s_1 | 85 | 100 | 100 |
| s_2 | 70 | 80 | 80 |

3.6 additional loads

loads applied additionally to the release torque M_z

3.7 deflection of the ski

deflection of the ski perpendicular to its gliding surface

Note 1 to entry: In practice, the deflection of the ski depends at the same time on the loading situation and the profile of the snow-surface ("geometrical" situation). In test simplification, only the "geometrical" situation is simulated.

3.8 type C bindings

bindings suitable for boot soles complying with type C of ISO 5355, which can be adjusted to at least the following release values:

a) $M_z = 10 \text{ Nm}$;

b) $M_y = 37 \text{ m}$.

3.9

type CA bindings

bindings suitable for boot soles complying with types C and A of ISO 5355, which can be adjusted to at least the following release values:

a) $M_z = 20 \text{ Nm}$

b) $M_y = 75 \text{ Nm}$

3.10

type A bindings

bindings suitable for boot soles complying with type A of ISO 5355

3.11

limit

L_1

lowest possible position of the setting indicator

3.12

limit

L_2

position of the indicator at the lowest mark on the setting scale

3.13

limit

L_3

position of the indicator at the highest mark on the setting scale

3.14

limit

L_4

highest possible position of the setting indicator

4 Test conditions

4.1 Loading rate

The tests shall be performed quasi-statically, ensuring that the following indicative values of the torque gradient comply with:

a) torsion release:

The angular velocity of the test shall be for:

M_z (moment in z-axis)

$3,8^\circ/\text{sec} \pm 0,1^\circ/\text{sec}$

FAV (moment in y-axis measured with force)

$5 \text{ mm/s} \pm 2\text{mm/s}$

b) forward bending release:

The angular velocity of the test shall be for:

M_y (moment in y-axis)

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3,8°/sec ± 0,1°/sec

FSH [Energy absorption (recentering)]

5 mm/s ± 2mm/s

4.2 Accuracy of measurement

The measurement error of the release value in torsion shall be smaller than ±2 % for values above 50 Nm inclusive and ±1 Nm for values below 50 Nm.

The measurement error of the release value in forward bending shall be smaller than ±2 % for values above 200 Nm inclusive and ±4 Nm for values below 200 Nm.

The test equipment shall be designed to allow application of pure moments without any extraneous forces during the entire release process.

4.3 Test sole

The test sole shall be in accordance with ISO 9838.

If a boot-binding system requires a specific boot-sole design, a test sole should be cut from a boot provided by the manufacturer and adapted for test needs.

The test sole shall be degreased, washed, and dried before testing.

4.4 Test ski

For the release tests in the laboratory, the bindings shall be mounted either on whole skis or on appropriate sections of skis. If the binding is pre-mounted (already mounted on the ski by the producer), use the ski with which the binding is delivered in its medium size. If not, choose a ski which represents the market.

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5 Test methods A and B**5.1 Principle**

The binding shall be mounted on a ski in accordance with the manufacturer's instructions. A test sole shall then be inserted in the binding.

In method A, the ski is rigidly connected to the test frame and the torque M_z or M_y is progressively applied to the sole until the binding releases. The peak value of M_z or M_y is recorded.

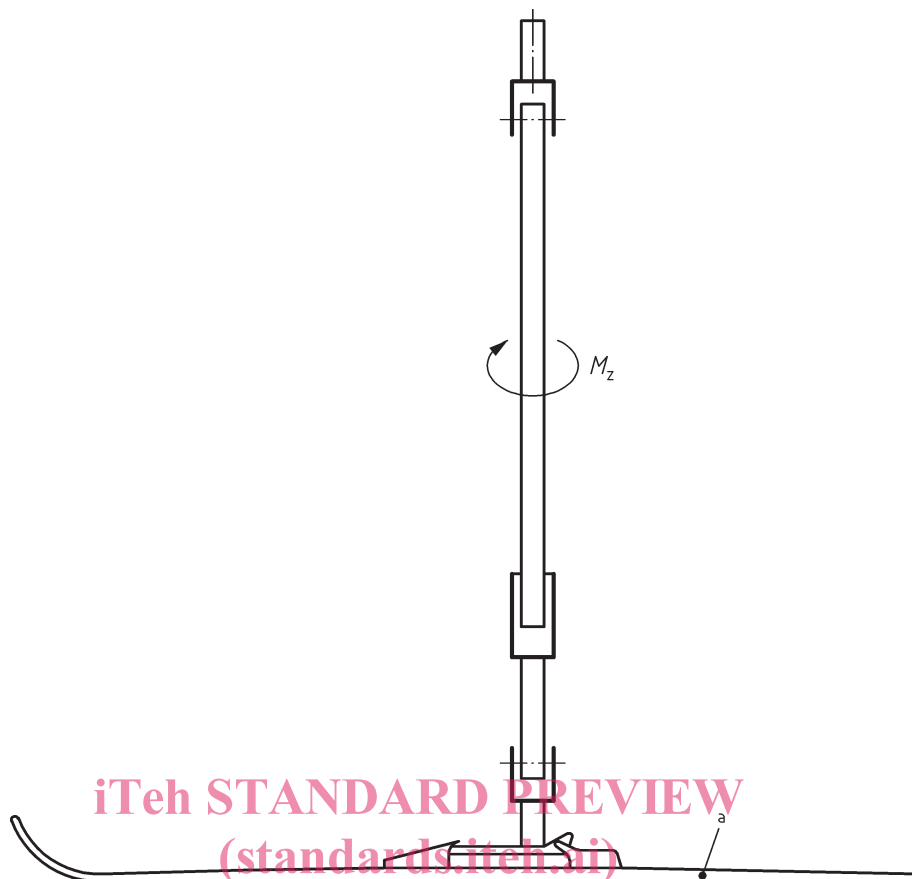
In method B, the sole is rigidly connected to the test frame through a sensor which measures the torques M_z and M_y . Forces are progressively applied to the ski until the binding releases. The peak value of M_z or M_y is recorded.

[Annexes A](#) and [B](#) give examples of how to realize method A or method B.

Passing by either method shall be deemed satisfactory.

5.2 Simple torsion test

For method A, see [Figure 2](#).

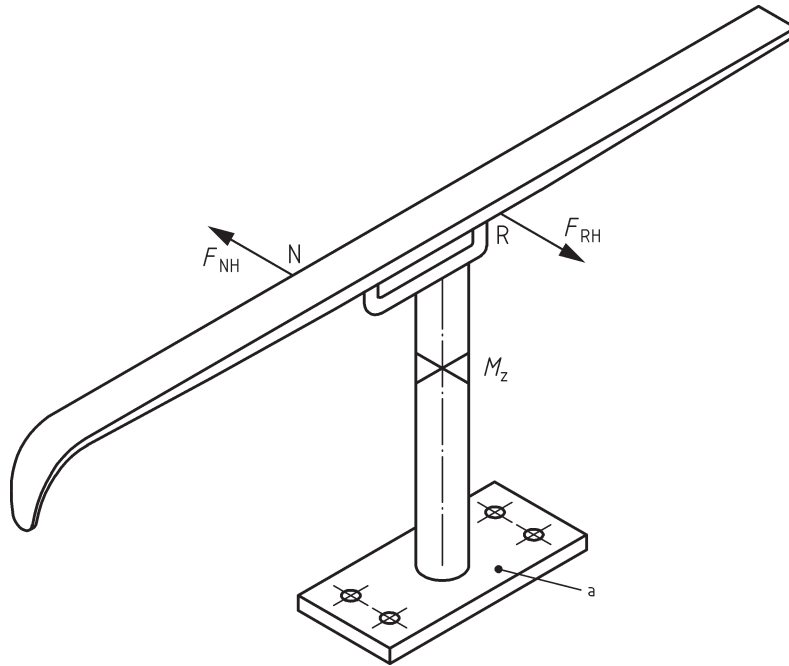
**Key**

a Fixed ski.

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Figure 2 — Application of M_z torque and measurement of $M_{z, \max}$ For method B, see [Figure 3](#).

**Key**

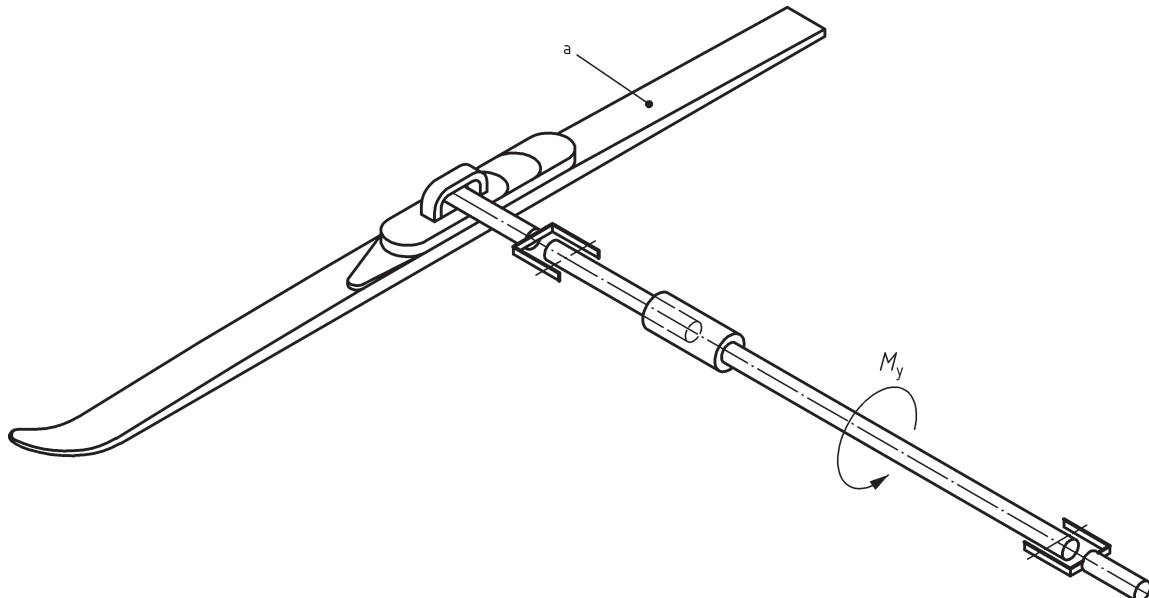
a Fixed base.

Figure 3 — Application of two equal forces F_{NH} and F_{RH} and measurement of $M_{z, \max}$ torque
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5.3 Forward bending test

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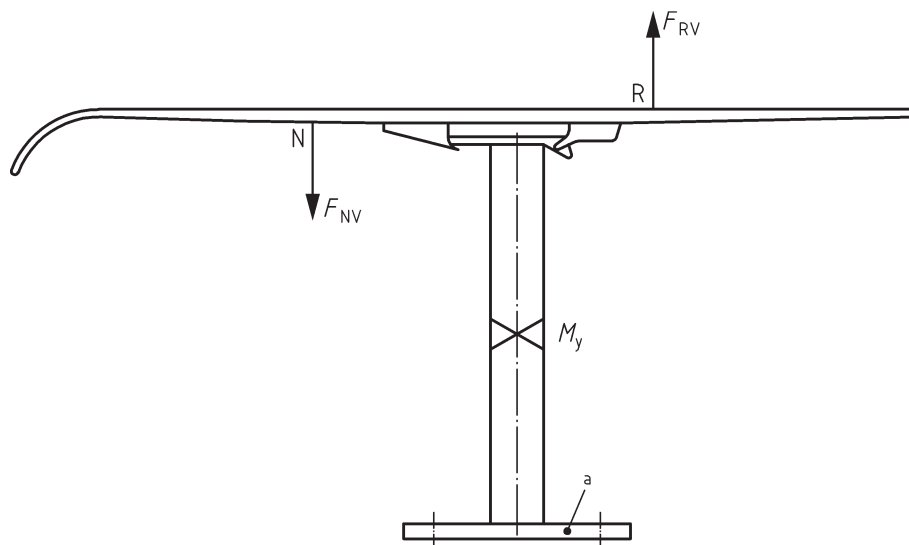
For method A, see [Figure 4](https://standards.iteh.ai/catalog/standards/sist/6aef068e-8e7b-468f-b5ce-b243ad2eb29c/sist-iso-9462-2017).

**Key**

a Fixed ski.

Figure 4 — Application of M_y torque and measurement of $M_{y, \max}$

For method B, see [Figure 5](#).



Key

a Fixed base.

Figure 5 — Application of two equal forces F_{NV} and F_{RV} and measurement of $M_{y, \max}$

6 Requirements and testing

6.1 General requirements

NOTE This subclause deals with general requirements covering topics where the evaluation is carried out visually.

6.1.1 Function and form

6.1.1.1 The binding shall release at least in two cases

- when applying a torque M_z about an axis perpendicular to the ski gliding surface, and
- when applying a torque M_y about an axis parallel to the ski surface and perpendicular to the longitudinal axis of the ski.

The binding is said to release when the mentioned torque reaches a maximum value (release value) and then drops to a value that is harmless for the skier. After release, all the loads applied by the ski and the boot on the leg shall remain under the dangerous level for all possible movements, and until all the risks associated with the coupling boot-ski have disappeared.

6.1.1.2 The release level shall be clearly indicated by a scale covering all of the setting range anticipated by the manufacturer. The release shall still be possible at the upper limit (maximum setting). Settings above $Z = 10$ shall be clearly differentiated from settings below $Z = 10$ on the indicator scale.

6.1.1.3 Each procedure of adjustment to the boot having an influence on the binding functioning shall be verifiable by the use of a clear indicator, or by any other means considered suitable by the operator for showing the correct adjustment.

6.1.1.4 The binding shall be equipped with a ski-brake or allow for an easy and secure attachment of a leash. The ski-brake and the attachment for the leash shall be according to ISO 11087.