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AMENDMENT 1
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Alpine touring ski-bindings — Safety requirements and test methods

AMENDMENT 1

Fixations pour le ski alpin de randonnée — Prescriptions de sécurité et méthodes d'essai

AMENDEMENT 1

Reference number
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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

Amendment 1 to ISO 13992:1997 was prepared by Technical Committee ISO/TC 83, *Sports and recreational equipment*, Subcommittee SC 3, *Ski bindings*.

The first edition of ISO 13992 is limited to the so-called first category tests, for which the use of method A and method B leads, in principle, to equivalent results. This concerns tests in simple torsion and in simple forward bending.

Two important characteristics of a ski binding, i.e. its behaviour under combined loading and its behaviour with ski deflection, remain unchecked in ISO 13992:1997.

Several attempts were made in order to find test procedures leading to equivalent results when using method A and method B. Each of these attempts was followed by comparative test series involving most of the existing laboratories working in this field.

The poor reproducibility observed between the laboratories has led to the opinion that, when combined loading is involved with or without deflection of the ski, the equivalence of the results using method A and method B was extremely difficult to achieve at a reasonable cost.

Therefore, it was decided to define the tests and requirements with combined loading and deflection of the ski separately for both methods. For method A, the tests and requirements described in this amendment are identical to those described in DIN 7881-1:1982 and BPA (Bureau suisse de prevention des accidents) requirements of 1984-06.

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AMENDMENT 1

Page 2, after the text of 3.4

Add the following new texts.

3.5
combined loading
loading of the sole 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

See Figure 1 and Table 1.

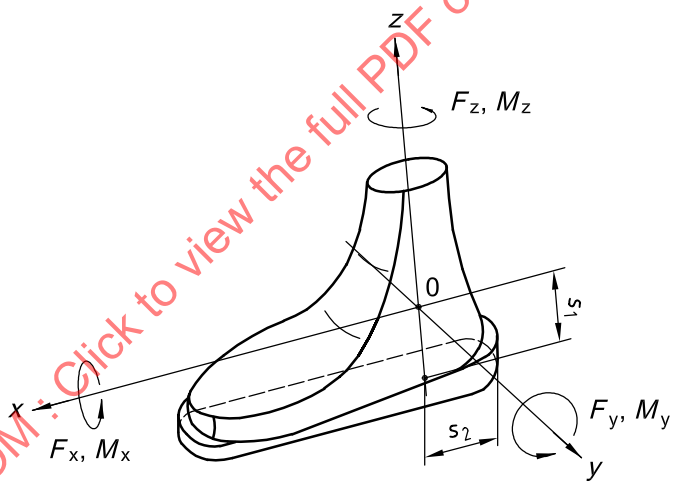


Figure 1 — Definition of the loads and torques

Table 1 — Coordinates of reference point 0

Dimensions in millimetres

	Type of binding		
	C	CA	A
S_1	85	100	100
S_2	70	80	80

NOTE 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 is that the loads applied additionally to the release torque M_z are held constant in value and direction throughout the release process.

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 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.

Pages 2 and 3, subclauses 3.5 to 3.14.

Renumber the subclauses as 3.8 to 3.17, respectively (i.e. 3.5 becomes 3.8, etc.).

Pages 2, 5 and 6, Figures 1 to 5

Renumber the figures as Figures 2 to 6, respectively. Also change the references to these figures in the text.

Pages 4 and 9, Tables 1 and 2

Renumber the tables as Tables 2 and 3, respectively. Also change the references to these tables in the text.

Page 10, after the text of 6.3.1

Add the following new texts.

6.3.2 Release with ski deflection

6.3.2.1 Requirements

The mean value of the deviations between each of the release values and the corresponding reference value shall not exceed 20 % for the torsion release (M_z) and 15 % for the forward bending release (M_y).

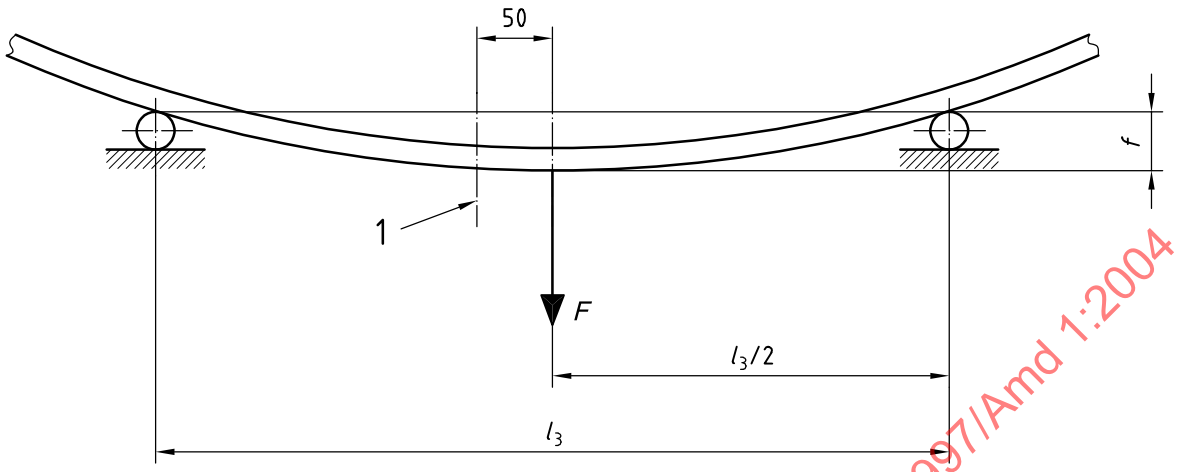
Each of the five values of the torsion release shall remain within ± 10 % of their mean value.

Each of the five release values for the forward-bending release should remain within ± 7,5 % of their mean value.

6.3.2.2 Testing

Subject only one binding to the test. Release the binding five times in torsion to the right and five times in forward bending. Carry out the tests at ambient temperature (23 ± 5) °C with a wet sole and binding.

Dimensions in millimetres



Key

1 boot toe

Figure 7 — Deflection of the ski

Position and deflect the test ski with the sole inserted in the binding in accordance with Figure 7 and Table 4 and force the ski to deflect to given values by a strap or clamp, which does not interfere with the binding.

If the distance of the supports is different , ensure that the same deflection of the ski is given.

Table 4 — Deflection of the ski according to type of binding

Dimensions in millimetres

Deflection parameter	Type of binding	
	C, CA	A
f	20 ± 1	60 ± 2
l_3	1 100	1 500

6.3.3 Release under combined loading

6.3.3.1 General requirements for scattering

For a given test, each of the five release values shall remain within ± 10 % of their mean values.

6.3.3.2 General test conditions

Subject only one binding to the following tests. Carry out these tests at ambient temperature (23 °C ± 5 °C), with a wet sole and binding.

For each of the following configurations of combined loading, release the binding five times in torsion to the right.

The values of the additional load are proportional to the reference value M_z measured according to 6.3.1.

Apply the combined loads to the ski boot during all its movements, which shall remain constant in amplitude and in direction relative to the ski boot.

6.3.3.3 Influence of forward lean of the body

6.3.3.3.1 Requirement

The mean value of the deviations between each of the release values and the reference value shall not exceed 35 %.

6.3.3.3.2 Testing

Apply the following additional loads to the sole:

$$+ M_y = 2M_z$$

$$-F_z = \frac{40\ \text{N}}{6\ \text{N}\cdot\text{m}} M_z$$

where M_z is the reference value.

The mean value is calculated from five measurements.

6.3.3.4 Influence of "roll loading"

6.3.3.4.1 Requirement

The mean value of the deviations between each of the release values and the reference value shall not exceed 20 %.

6.3.3.4.2 Testing

Apply the following additional load on the sole:

$M_x = 0{,}2M_z$ (first test configuration);

$M_x = -0{,}2M_z$ (second test configuration).

The mean value is calculated from five measurements.

6.3.3.5 Influence of backward lean of the body

6.3.3.5.1 Requirement

The mean value of the deviations between each of the release values and the reference value shall not exceed 25 %.

6.3.3.5.2 Testing

Apply the following additional loads on the sole:

$$- M_y = 1{,}25M_z$$

$$-F_z = \frac{40\ \text{N}}{6\ \text{N}\cdot\text{m}} M_z$$

The mean value is calculated from five measurements.