INTERNATIONAL STANDARD

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Telemark skis and bindings — Binding mounting area — Requirements and test methods

Skis et fixations de skis pour télémark — Zone de montage de la fixation — Exigences et méthodes d'essai

Reference number
ISO 11497:1998(E)

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.

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.

International Standard ISO 11497 was prepared by Technical Committee ISO/TC 83, *Sports and recreational equipment*, Subcommittee SC 4, *Skis and snowboards*.

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Telemark skis and bindings — Binding mounting area — Requirements and test methods

1 Scope

This International Standard specifies requirements and test methods for the binding mounting area of skis, ski bindings and retention devices used for telemark skiing, in order to optimize the compatibility of the functional unit "ski — binding — retention device — boot".

It contains data for the manufacturer of telemark skis, bindings and retention devices concerning dimensions, tests and other specifications for the binding mounting area.

This International Standard is applicable to telemark skis of the following nominal lengths:

$l_N \geqslant 1\,700$ mm.

For dimensions with no tolerance indicated, a tolerance of ± 1 mm is valid.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2632-1:1985, *Roughness comparison specimens — Part 1: Turned, ground, bored, milled, shaped and planed*.

ISO 6289:1985, *Skis — Terms and definitions*.

ISO 6506:1981, *Metallic materials — Hardness test — Brinell test*.

ISO 7794:1991, *Cross-country skis — Ski binding screws — Requirements*.

ISO 10228:1991, *Cross-country skis — Binding mounting area — Requirements for test screws*.

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 6289, and the following, apply.

3.1
binding mounting
all the connections between the parts of the binding and the ski, especially designed to transmit the forces between binding and ski and which shall fulfil the minimum strength requirements determined for the function of the binding

3.2
mounting point
location on the ski that will indicate the position of the boot along the length of the ski for the purpose of mounting the binding, which corresponds to the front upper part of the boot and indicates placement of the drilling jig

3.3
telemark skiing
type of alpine skiing technique where the heel of the boot is not fixed during downhill skiing

4 Specifications of binding mounting area

4.1 Indication of mounting point

The mounting point shall be located by the ski manufacturer with a clearly visible mark at least on the left side and/or the top surface of the ski, up to the left outer edge.

4.2 Length of binding mounting area

The length of the binding mounting area about the mounting point shall be

110 mm forward, and

300 mm rearward.

4.3 Width of binding mounting area

The minimum width of the binding mounting area shall be 44 mm, symmetrical about the longitudinal axis of the ski.

4.4 Centre-to-centre distances for binding mounting screws

4.4.1 Maximum centre-to-centre distance

The maximum centre-to-centre distance perpendicular to the centre-line of the ski shall be such that the screws are located entirely within the binding mounting area.

If standard ski binding screws in accordance with ISO 7794 of nominal diameter 6,3 mm are used, the maximum centre-to-centre distance of the binding mounting screws shall be 36 mm.

4.4.2 Minimum centre-to-centre distance

For screws which are used for mounting of parts of the binding and retention devices, the centre-to-centre distance shall not be less than

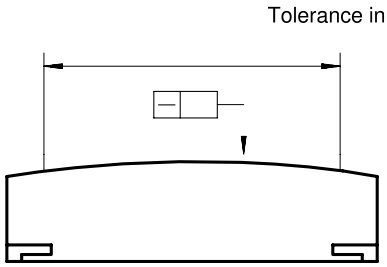
26 mm in the longitudinal direction, and

21 mm in all other directions.

4.5 Conditions relating to the surface of the binding mounting area

4.5.1 Transverse profile (convexity) of the surface

Deviations of straightness of the transverse profile from a flat profile are only permissible in the form of a constant curve across the width of the mounting area, the tolerance on straightness within this area is given in figure 1.



b Width of binding mounting area

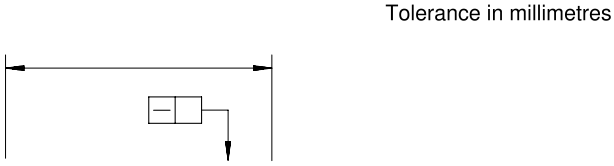
Figure 1 — Transverse profile of the structure

There shall be no step in the profile within a width of 44 mm symmetrical to the longitudinal axis; outside this area steps are allowed only in the body of the ski.

In any case, there shall be no elevation beyond the surface of the binding mounting area.

4.5.2 Longitudinal profile of the surface

Deviations from the straightness of the longitudinal profile from a flat profile are only permissible in the form of a constant curve in the length of the mounting area; the maximum tolerance on straightness in this area, the ski base being pressed against a flat surface, shall be 5 mm as shown in figure 2.



l Length of binding mounting area

Figure 2 — Longitudinal profile of the surface

4.5.3 Side walls

Side walls shall be designed so that binding mounting with commonly used mounting devices is ensured. The basic requirement is that the clamping elements of the mounting device reach at least to the running surface of the ski.

4.6 Minimum thickness of binding mounting area of ski

Within the total binding mounting area, a drill hole depth d' = 9,5 mm shall be available.

4.7 Drill hole diameter

The drill hole diameter shall be 3,6 mm H12. If the ski manufacturer recommends a different drill hole diameter to be used for a particular ski model, this shall be clearly indicated on the ski within the binding mounting area. In this case, the test according to 9.3 shall be carried out accordingly.

5 Strength requirements of binding mounting area

5.1 Screw retention strength

Within the defined binding mounting area, the minimum value of the screw retention strength for two screws, if the load is applied quasi-statically, shall be 2 200 N.

5.2 Stripping resistance of the binding mounting area of the ski

The minimum value of the stripping resistance of the ski shall be 5 N·m.

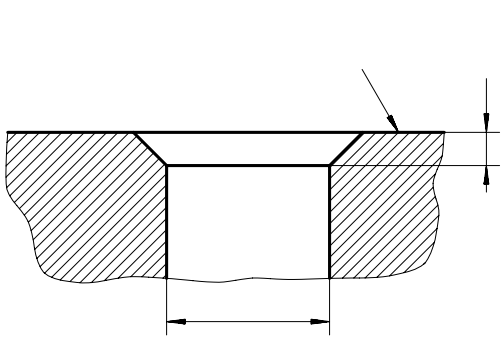
6 Specifications of the binding

The hole-pattern shall be in accordance with the geometrical requirements of 4.2, 4.3 and 4.4.

In order to ensure the required penetration depth, the manufacturer of the binding shall select a suitable length of binding screw, so that after binding mounting the shaft of the screw penetrates the ski (8,5 ± 0,5) mm.

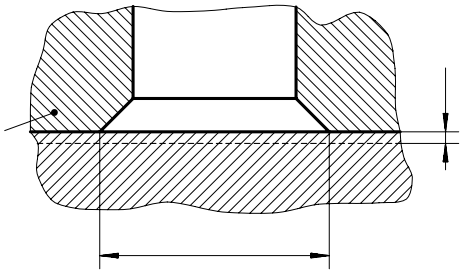
To avoid damaging the top layers (damage to the adhesive bond), the diameter of mounting plate holes or countersink facing the ski shall not exceed 7 mm and drill countersink shall be designed in such a way that its penetration into the top surface of the ski does not exceed 0,6 mm (see figure 3).

Dimensions in millimetres



1 Top surface of the ski
2 Max. 0,6 × 45 or max. R0,8

a) Contact area — Ski



3 Penetration depth into the top surface of the ski
4 Mounting plate of the binding

b) Contact area — Binding

Figure 3 — Contact areas of ski and binding

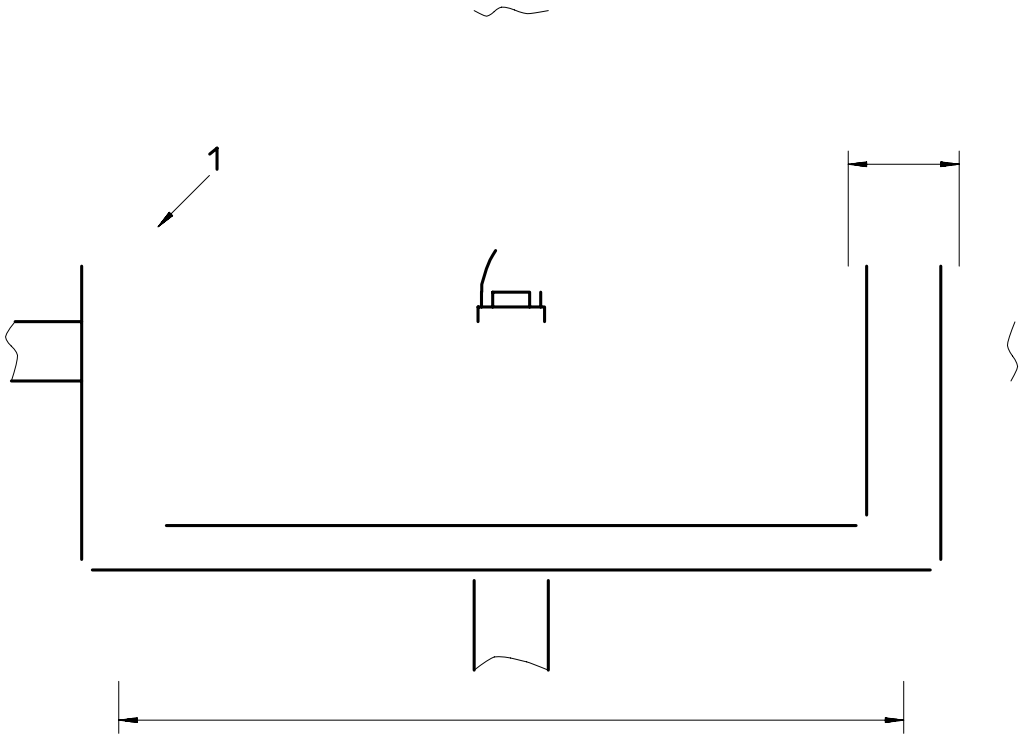
As mounting elements, cross-country ski binding screws in accordance with ISO 7794 shall be used.

7 Apparatus

7.1 Retention strength

7.1.1 Tensile testing machine, with a pull-out device as shown in figure 4, providing a loading rate accuracy of ± 20 % at a loading rate of 5 mm/min and a load measurement accuracy of ± 1 % with a minimum load range of 5 000 N.

Dimensions in millimetres



1 Free-rolling support point

Figure 4 — Tensile testing machine with pull-out device

The pull-out device shall consist of

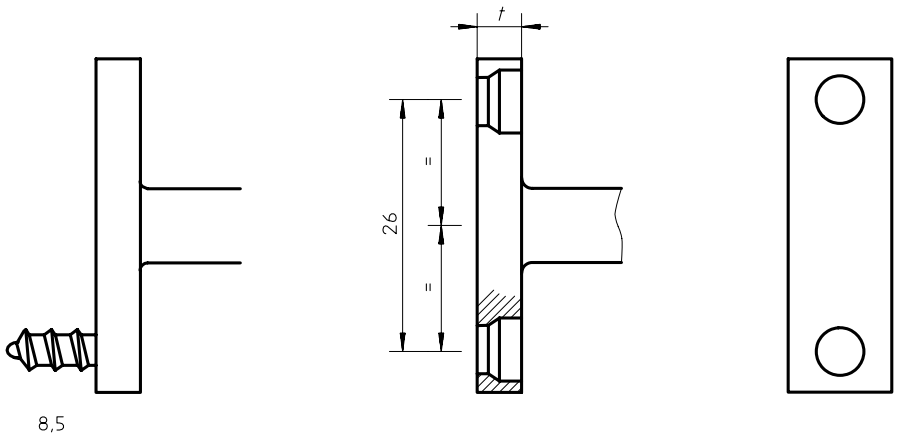
a) an attachment element, as shown in figure 5, made of cold-rolled steel or equivalent;

b) a universal joint which is connected to the attachment element and to the clamping device of the test machine;

c) a ski support with two support rollers 300 mm apart.

The pull-out device shall be a self-aligning type so that no moment is imposed on the screw pattern.

Dimensions in millimetres



t Thickness according to the penetration depth needed

Figure 5 — Attachment element

7.2 Stripping resistance

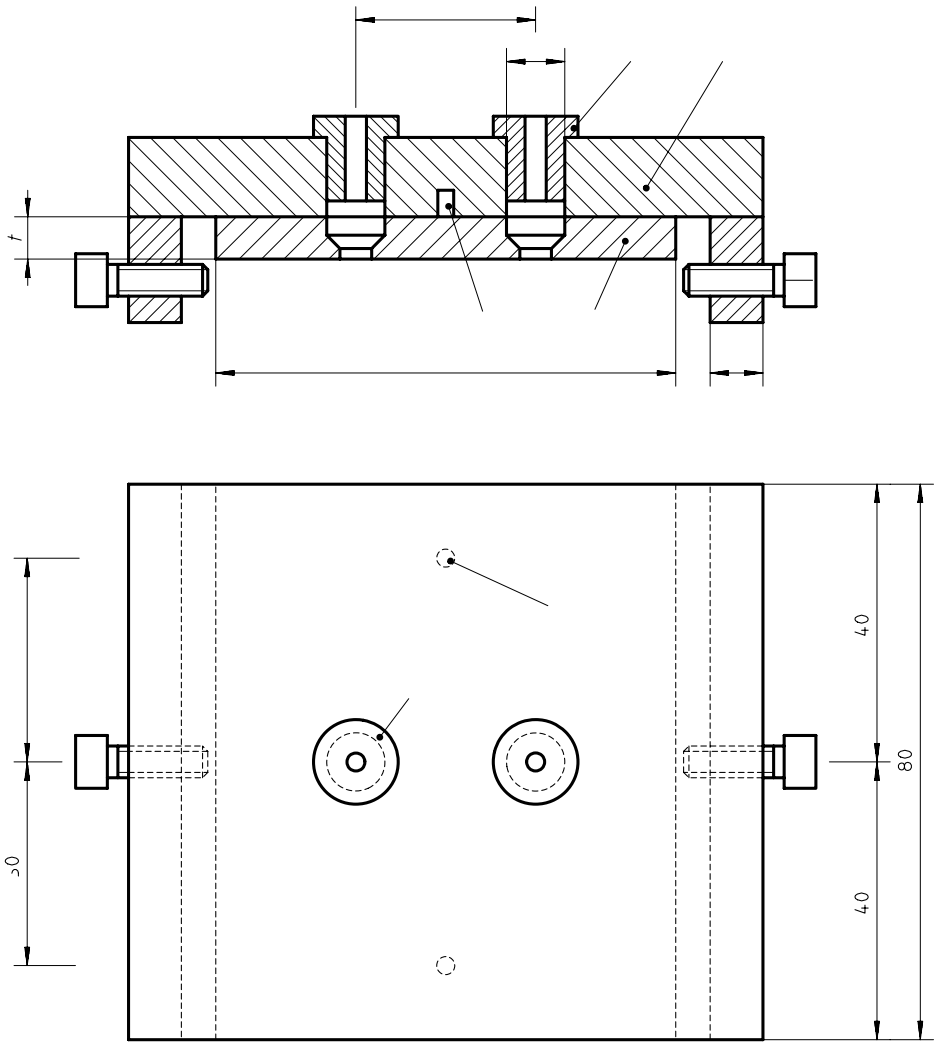
7.2.1 Jig, as shown in figure 6, for drilling holes, mounting test screws and determining the stripping torque.

Used with a drill bushing, the jig shall ensure an exact drill hole and screw mounting perpendicular to the top surface of the ski.

The jig is equipped with a friction plate made of steel with hardness of approximately 135 HB30 according to ISO 6506, and surface roughness R_a of 0,8 µm according to ISO 2632-1.

Standard test screws according to clause 8 shall be used and a penetration depth of $d = (8{,}5 \pm 0{,}5)$ mm shall be reached.

Dimensions in millimetres



Key

1 Drill jig bushing
2 Drill jig
3 Friction plate
4 Centering pin to locate the friction plate

t Thickness according to the penetration depth needed

Figure 6 — Drill and test jig

8 Test screws

8.1 Retention strength

The screws used for the retention strength test shall be in accordance with ISO 10228.

8.2 Stripping resistance

Test screws with a penetration depth of (8,5 ± 0,5) mm complying with ISO 10228 shall be used.

9 Test methods

9.1 Sampling and conditioning

Carry out the test on three pairs of skis at a room temperature of (23 ± 5) °C, without specific preconditioning of the ski to be tested.

9.2 General requirements

Test the requirements in 4.1 to 4.5 by measurement and/or sight check.

9.3 Retention strength test

9.3.1 Mounting of the attachment element

The attachment element shall be attached to the ski by means of two test screws as specified in 8.1. Accurately locate and drill the holes to the proper depth using a drill jig, ensuring that the drill holes are perpendicular to the surface of the ski.

Ensure that the dimensions of the drill holes are as follows:

— drill hole diameter: 3,6 mm H12 (or according to the manufacturer's instructions);

— drill hole depth: $\left(9\ ^{+0,5}_{-0}\right)$ mm.

Ensure that the screws are mounted perpendicular to the top surface of the ski, without pretapping and lubrication unless specified by the manufacturer.

Tightening torque: (4 ± 0,5) N·m.

9.3.2 Positioning of the pull-out tests within the binding mounting area

The location of the pull-out tests within the binding mounting area is shown in figure 7. Locations 1 and 2 are those which are specified by this International Standard. Choose locations 3 and 4 at random, but ensure that the distance with respect to the side of the mounting area is as specified in figure 7. The minimum spacing in the longitudinal direction shall be 25 mm.

Dimensions in millimetres

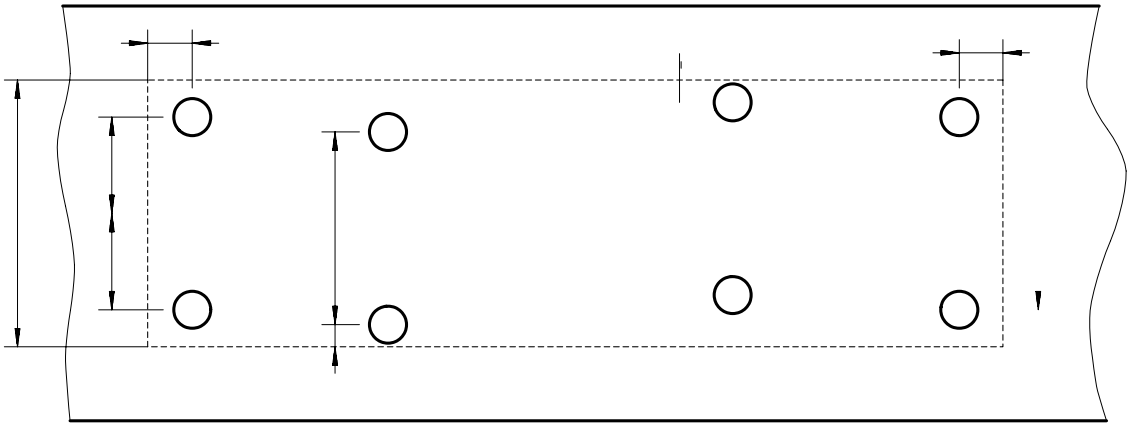


Figure 7 — Positioning of the pull-out tests within the binding mounting area

9.3.3 Load application

Ensure that the loading rate is quasi-static, i.e 5 mm/min. Load the ski until it fails. The maximum load which is applied up to the moment when the two test screws are pulled out or when the top skin of the ski is delaminated is the screw retention value for this particular test point.

Measuring accuracy: ± 50 N.

9.4 Stripping resistance test

Use the test jig with a drill bushing to drill a hole with ∅ 3,6 mm H12 and a depth of 9 mm.

Mount and tighten the test screw, always with the test jig as a guide, without the drill bushing. Apply an increasing torque with a torque wrench screwdriver until a drop of the torque resistance indicates failure of the thread or until the load equals the tightening moment specified in 5.2.

Ensure that the vertical force applied to the screwdriver is less than 500 N.

Carry out the test with a minimum of 10 different screws of the same type.

Use a new hole in the friction plate for each test.

10 Test report

The test report shall include the following information:

a) reference to this International Standard;

b) ski manufacturer, model designation, nominal length, year of manufacture and serial number;

c) testing machine characteristics: type, load range and loading rate;

d) sketch showing locations 1, 2, 3 and 4;

e) test results on three pairs of skis and type of failure;

f) test results of stripping resistance on three pairs of skis;

g) any deviation from this International Standard and the reasons for this deviation;

h) date of tests.

ICS 97.220.20

Descriptors: sports equipment, skis, alpine skis, fastenings, ski-bindings, mounting surfaces, specifications, mechanical strength, tests, mechanical tests, test equipment.

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