
International Standard



8364

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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

Skis et fixations de ski alpin — Zone de montage de la fixation — Exigences de tenue et méthodes d'essai

First edition — 1985-07-15

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UDC 685.363.2

Ref. No. ISO 8364-1985 (E)

Descriptors : sports equipment, skis, alpine skis, assembling, fastenings, specifications, tests, mechanical tests, test equipment.

Price based on 6 pages

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8364 was prepared by Technical Committee ISO/TC 83, *Sports and recreational equipment*.

It cancels and replaces International Standards ISO 5144-1977, ISO 6006-1980, ISO 6287-1980 and ISO 6288-1980 of which it constitutes a consolidation and minor revision.

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

1 Scope and field of application

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

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

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

- group 1 : $l_N > 1\ 700$ mm
- group 2 : $1\ 400$ mm $< l_N < 1\ 700$ mm
- group 3 : $1\ 000$ mm $< l_N < 1\ 400$ mm
- group 4 : 750 mm $< l_N < 1\ 000$ mm

The requirements for group 1 are also applicable to adult skis shorter than 1 700 mm.

2 References

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

ISO 6004, *Alpine skis — Ski binding screws — Requirements.*

ISO 6289, *Skis — Terms and definitions.*¹⁾

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

ISO 7049, *Cross recessed pan head tapping screws.*

1) At present at the stage of draft.

3 Definitions

For the purpose of this International Standard, the definitions of ISO 6289, and the following, apply.

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.

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, near the left outer edge.

4.2 Length of binding mounting area

The length of the binding mounting area forwards and backwards from the mounting point shall be

- group 1 : 275 mm
- group 2 : 240 mm
- group 3 : 210 mm
- group 4 : 190 mm

4.3 Width of binding mounting area

The minimum width of the binding mounting area shall be

- groups 1 and 2 : 48 mm
- groups 3 and 4 : 46 mm

symmetrical about the longitudinal axis of the ski.

4.4 Minimum thickness of binding mounting area of ski

Within the total binding mounting area, a penetration depth, d , shall be available (see figure 1)

- groups 1 and 2 : $d > 8,4$ mm
- groups 3 and 4 : $d > 6,4$ mm

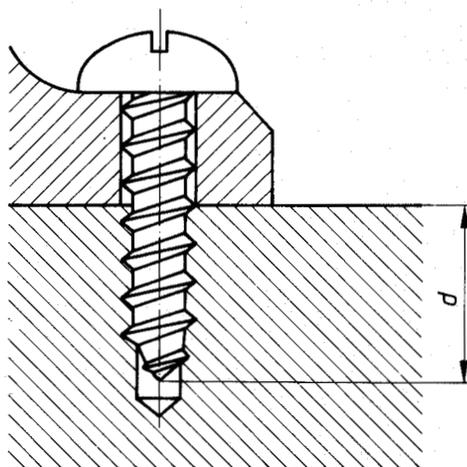


Figure 1 — Penetration depth of mounting screws

4.5 Centre-to-centre distances for binding mounting screws

4.5.1 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 of nominal diameter ST 5,5 are used, the maximum centre-to-centre distance of the binding mounting screws shall be

- groups 1 and 2 : 42,5 mm
- groups 3 and 4 : 40,5 mm

4.5.2 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

- groups 1 and 2 : 25 mm in the longitudinal direction and 20 mm in all other directions
- groups 3 and 4 : 20 mm in the longitudinal direction and 15 mm in all other directions

4.6 Conditions relating to the surface of the binding mounting area

4.6.1 Transverse profile (convexity) of the surface

Deviations from 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 2.

Tolerance in millimetres

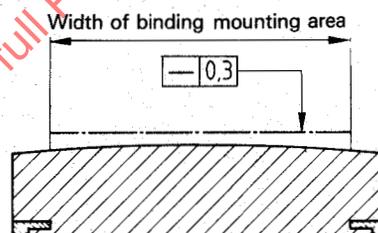


Figure 2 — Transverse profile of the surface

There shall be no step in the profile within a width of 55 mm for all groups symmetrical to the longitudinal axis; outside this area steps are allowed only into the body of the ski.

4.6.2 Longitudinal profile of the surface

Deviations from 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 tolerance on straightness in this area, the ski base being pressed against a flat surface, is given for groups 1 and 2, and groups 3 and 4, in figure 3.

Tolerances in millimetres

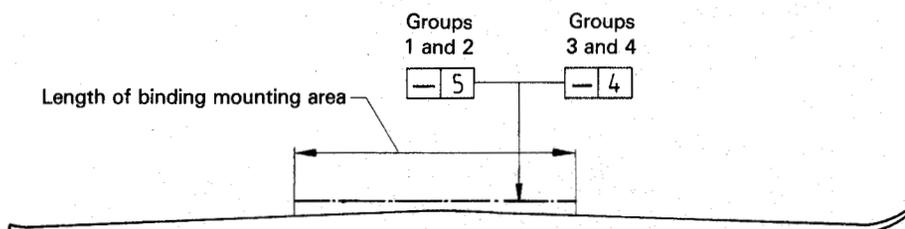


Figure 3 — Longitudinal profile of the surface

4.6.3 Side walls

The side walls of the ski contiguous with the binding mounting area shall be perpendicular to the top surface of the ski within normal manufacturing requirements. This can be considered normally to be within $\pm 3^\circ$.

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 as follows

- group 1 : 2 200 N min.
- group 2 : 1 800 N min.
- group 3 : 1 300 N min.
- group 4 : 1 300 N min.

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 for groups 1 and 2.

NOTE — The present state of the art does not allow a stripping resistance of 5 N·m for skis of groups 3 and 4. It is the responsibility of the ski manufacturer to indicate ski models demanding caution (stripping resistance lower than 5 N·m) when mounting bindings and to give mounting instructions such as smaller diameter drilling and manual screwdriving.

6 Specifications of the binding

The hole-pattern shall be in accordance with the geometrical requirements of 4.2, 4.3, 4.4 and 4.5.

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

- groups 1 and 2 : $d = 8 \pm 0,4$ mm
- groups 3 and 4 : $d = 6 \pm 0,4$ mm

To avoid damage of the top layers (damage of 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.

As mounting elements, ski binding screws in accordance with ISO 6004 shall be used.

7 Apparatus

7.1 Retention strength

Tensile testing machine (with a pull-out device according to figure 4), having a minimum load range of 10 000 N.

The pull-out device (see figure 4) shall consist of :

- a) a steel attachment plate with two holes of diameter 6 mm — steel hardness shall be 135 HBS 10/3 000 according to ISO 6506;
- b) a universal joint, which is connected to the attachment plate and to the clamping device of the test machine;
- c) a ski support with two support rollers.

When using standard test screws according to clause 8, the following penetration depths shall be reached :

- groups 1 and 2 : $d = 8 \pm 0,4$ mm
- groups 3 and 4 : $d = 6 \pm 0,4$ mm

7.2 Stripping resistance

Jig, for drilling holes, mounting test screws and determination of stripping torque (see figure 6).

The jig, used with a drill bushing, guarantees exact drill holes 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 HBS 10/3 000 according to ISO 6506 and surface roughness R_a of 0,8 μm according to ISO 2632/1.

When using standard test screws according to clause 8, the following penetration depths shall be reached :

- groups 1 and 2 : $d = 8 \pm 0,4$ mm
- groups 3 and 4 : $d = 6 \pm 0,4$ mm

8 Test screws

The screws used for the retention and stripping tests shall be in accordance with ISO 6004 with the following defined characteristics :

- length : groups 1 and 2 : $12 \pm 0,2$ mm
groups 3 and 4 : $10 \pm 0,2$ mm
- head : pan head (complying with the requirements of ISO 7049) with serrated bearing surface

NOTE — To ensure reproducibility of test results, it is recommended that the same type of screw be used. A suitable product, available commercially, is the von Moss SBS screw plastite No. 12 with W-point. This information is given for the convenience of the user of this International Standard and does not constitute an endorsement of this product by ISO.

9 Procedure

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 of 4.1 to 4.6 by measurement and/or sight check.

9.3 Retention strength test

9.3.1 Mounting of the attachment plate

It is recommended that a drill jig be used to ensure exact drill holes, perpendicular to the top surface of the ski, and at the exact distance apart.

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

- drill hole diameter : ϕ 4,1 mm H12
- drill hole depth :
 - groups 1 and 2 : $9,0 \begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}$ mm
 - groups 3 and 4 : $7,0 \begin{smallmatrix} +0,5 \\ 0 \end{smallmatrix}$ mm

Ensure that the drill countersink is in accordance with clause 6.

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

Tightening torque :

- groups 1 and 2 : $4 \pm 0,5$ N·m
- groups 3 and 4 : $3 \pm 0,5$ 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 5. 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 5. The minimum spacing in the longitudinal direction is

- groups 1 and 2 : 25 mm
- groups 3 and 4 : 20 mm

Ensure that the tests are not influenced by the preceding tests. If in a retention test the top skin is delaminated, continue the test on another ski.

9.3.3 Load application

Ensure that the loading rate is quasi-static, not more than 20 mm/min.

Measure the maximum load which is applied during the load application.

Measuring accuracy : ± 50 N.

9.4 Stripping resistance test

9.4.1 Use the test jig with a drill bushing to drill a hole with ϕ 4,1 mm H12 ($\begin{smallmatrix} +0,12 \\ 0 \end{smallmatrix}$ mm) and a depth of 8,4 mm for groups 1 and 2 and 6,4 mm for groups 3 and 4.

Where a smaller drill diameter is recommended by the ski manufacturer, complementary tests according to the ski manufacturer's recommendation will be for information only.

9.4.2 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 of 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 brand, model designation, nominal length, year of manufacture and serial number;
- c) testing machine : 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 for groups 1, 2, 3 and 4, respectively;
- f) test results of stripping resistance on three pairs of skis;
- g) any deviation from this International Standard and reasons for this deviation.