TC 83

International Standard 7795

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

Cross-country skis — Ski binding screws — Test methods

Skis de fond — Vis de fixation — Méthodes d'essai

First edition — 1984-05-01

UDC 685.363.2 : 621.882.24 **Ref. No. ISO 7795-1984 (E)**

Descriptors: skis, cross-country skis, screws, tests, fastenings, assembling, specifications, mechanical tests.

Price based on 5 pages

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

International Standard ISO 7795 was developed by Technical Committee ISO/TC 83, *Sports and recreational equipment*, and was circulated to the member bodies in March 1983.

It has been approved by the member bodies of the following countries:

Austria	Italy	Sweden
Czechoslovakia	Japan	Switzerland
France	New Zealand	USA
Germany, F.R.	Poland	USSR
India	South Africa, Rep. of	

No member body expressed disapproval of the document.

Printed in Switzerland

Cross-country skis — Ski binding screws — Test methods

1 Scope and field of application

This International Standard specifies methods of test for the determination of the mounting and fastening characteristics of screws which are intended for fastening ski bindings to cross-country skis.

Requirements are specified in ISO 7794.

The results of these methods of test characterize only the properties of the screw and give no information about the actual mounting and fastening characteristics of different ski models; these being specified in ISO 7265 and ISO 7793.

2 References

ISO 7264, *Cross-country skis — Dimensions of the binding mounting area for toe clip bindings.*

ISO 7265, *Cross-country skis — Binding mounting area — Static screw retention strength — Requirements and test method.*[1)]

ISO 7793, *Cross-country skis — Binding mounting area — Stripping torque — Requirements and test method.*

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

3 Definitions

For the purpose of this International Standard, the definitions given in ISO 7794 apply.

4 Test screws

Test screws shall be in accordance with ISO 7794.

5 Apparatus

5.1 Test assembly

The tests shall be performed on test assemblies representative of material configurations commonly used in cross-country ski construction and with dimensions similar to those of a cross-section of the binding mounting area of a cross-country ski.

5.1.1 Dimensions

See figure 1.

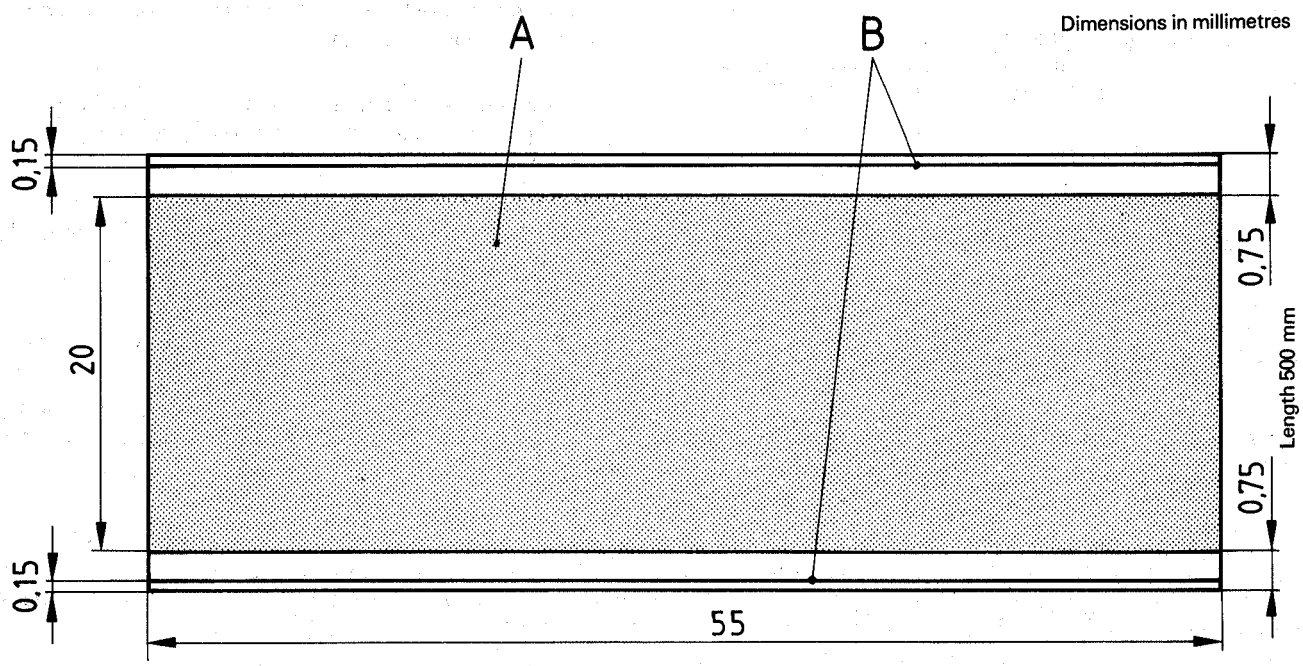

Figure 1 — Test assembly dimensions

1) At present at the stage of draft.

5.1.2 Preparation of test assemblies

In order to avoid non-uniform surface zones due to the density gradient in the hardened polyurethane foam, the 20 mm thick core shall be cut out from a block having a thickness of 30 mm and from which the material is removed symmetrically.

The parts of the test assembly (see figure 1 and 5.1.3) shall be bonded with Araldite AW 136[1] and Hardener HY 994[1] under the following conditions:

a) temperature: 100 °C;

b) pressure: 500 ± 100 kPa;

c) curing time: 15 min.

Assemblies shall be cooled under pressure and allowed to age for 1 month prior to use for testing.

5.1.3 Material configuration of the test specimen

The material configuration of the test specimen (see figure 1, A and B) shall be as follows:

A Core of 20 mm thick, of rigid polyurethane foam, volumetric mass[2] $\varrho = 0{,}30 \pm 0{,}005$ g/cm^3, without skin;

B Layers 0,75 mm thick, of glass fibre reinforced epoxy laminate[3], 0,60 mm thick, and a laminate layer of cellulose fibres 0,15 mm thick.

The glass fibre laminate layer shall be made of a woven glass fibre fabric layer and an unidirectional rovings layer.

The total mass of glass shall be distributed as follows: 97 % for warp and 3 % for weft. The glass content in the glass fibre laminate shall be 68 %.

The face to be bonded on the polyurethane foam core shall be previously rubbed down with grain 60. The total mass of glass after rubbing down shall be approximately 775 g/m^2.

5.2 Drill and test jig

A jig, as shown in figure 3, shall be used for drilling the holes and also for determining the driving torque and the stripping torque.

Used with a removable drill bushing the jig shall ensure an exact drill hole of diameter 3,6 mm, perpendicular to the top surface of the test assembly.

The jig shall also ensure that the screw is set and mounted perpendicular to the top surface of the test assembly.

The jig is equipped with a friction plate (see figure 2) provided with conic holes similar to those of toe bindings. It is made from aluminium alloy, with a Brinell surface hardness of HB 105 (with a ball diameter of 10 mm and a load of 100 daN); for example: aluminium alloy type 2017 A, T4.

The countersink of the friction plate shall be machined with a precision tool in order to ensure correct dimensions. The surface roughness shall be such that no vibration marks are visible.

The thickness of the friction plate and depth of the conic holes are in accordance with the penetration depth of 10 ± 0,5 mm.

5.3 Pull-out apparatus

Two rolls, of diameter 30 mm, and 250 mm apart, shall be used to support the test assembly together with an attachment plate, which permits penetration by the test screw to a depth of 10 mm in the test assembly (see figure 4).

6 Procedure

6.1 Determination of driving torque

6.1.1 Using the drill jig (5.2), drill a hole of ϕ 3,6 mm H12 ($^{+0,12}_{0}$ mm) and depth of 10,5 mm in the test assembly (5.1). The hole shall not be tapped.

6.1.2 Drive the screw into the hole using the test jig and a suitable torque wrench screwdriver. Driving speed shall be lower (less) than 0,25 turns per second. Read the driving torque after each half rotation.

No lubrication shall be used during this procedure and the maximum penetration without contact of the screw head and the friction plate shall be 9,5 mm.

6.1.3 Record the maximum driving torque, in newton metres, as the largest measured value of the torque applied during the driving procedure.

6.1.4 Repeat the test, using at least 10 different screws of the same type.

6.2 Determination of stripping torque

6.2.1 Using the drill jig (5.2), drill a hole of ϕ 3,6 mm H12 ($^{+0,12}_{0}$ mm) and depth of 10,5 mm in the test assembly (5.1). The hole shall not be tapped.

1) Araldite AW 136 and Hardener HY 994 are trade names for commercially available products. This information is given for the convenience of the users of this International Standard and does not constitute an endorsement of these products by ISO. The address of the supplier may be obtained from the Secretariat of ISO/TC 83/SC 4 (ON, Austria) or from the ISO Central Secretariat.

2) The density of the polyurethane foam shall be measured before bonding.

3) Details of a suitable fibreglass laminate may be obtained from the Secretariat of ISO/TC 83/SC 4 (ON, Austria) or from the ISO Central Secretariat.

6.2.2 Use the test jig to mount and tighten the screws. Apply an increasing torque with the torque wrench screwdriver until a drop in the torque resistance indicates failure of thread.

6.2.3 Record the stripping torque, in newton metres, as the maximum value of the moment read on the torque wrench screwdriver.

6.2.4 Repeat the test, using at least 10 different screws of the same type. Use a new hole of the friction plate for each test.

6.3 Static pull-out test for one screw

6.3.1 Using the drill jig (5.2), drill holes of ϕ 3,6 mm H12 ($^{+\,0,12}_{0}$ mm) and a depth of 10,5 mm in the test assembly (5.1), ensuring that the holes are at least 50 mm apart. The holes shall not be tapped.

6.3.2 Use the pull-out apparatus described in 5.3, which allows the introduction of the screw perpendicular to the surface of the test assembly to a penetration depth of 10 mm, and a axial load of the screw perpendicular to the surface of the assembly during the pull-out test.

Drive and tighten the screw with a tightening moment of 3 N·m.

Position the test assembly so that the tested screw is equidistant from the support rolls.

6.3.3 Apply an axial load at a rate of 20 mm/min, until the screw is pulled from the test assembly. Record the maximum load required.

6.3.4 Repeat the test, using at least 10 different screws of the same type.

Dimensions in millimetres

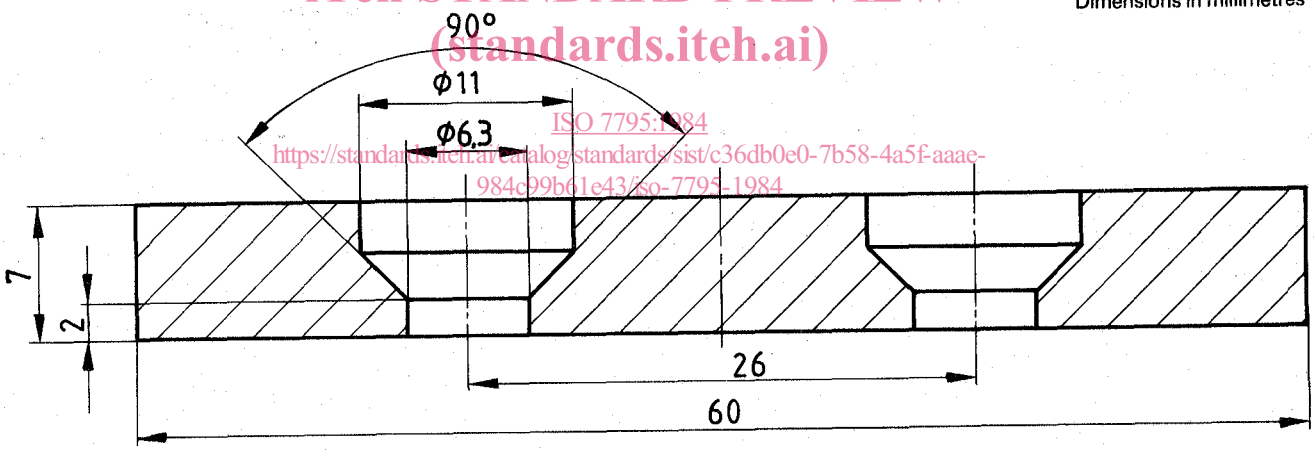

Figure 2 — Friction plate

Dimensions in millimetres

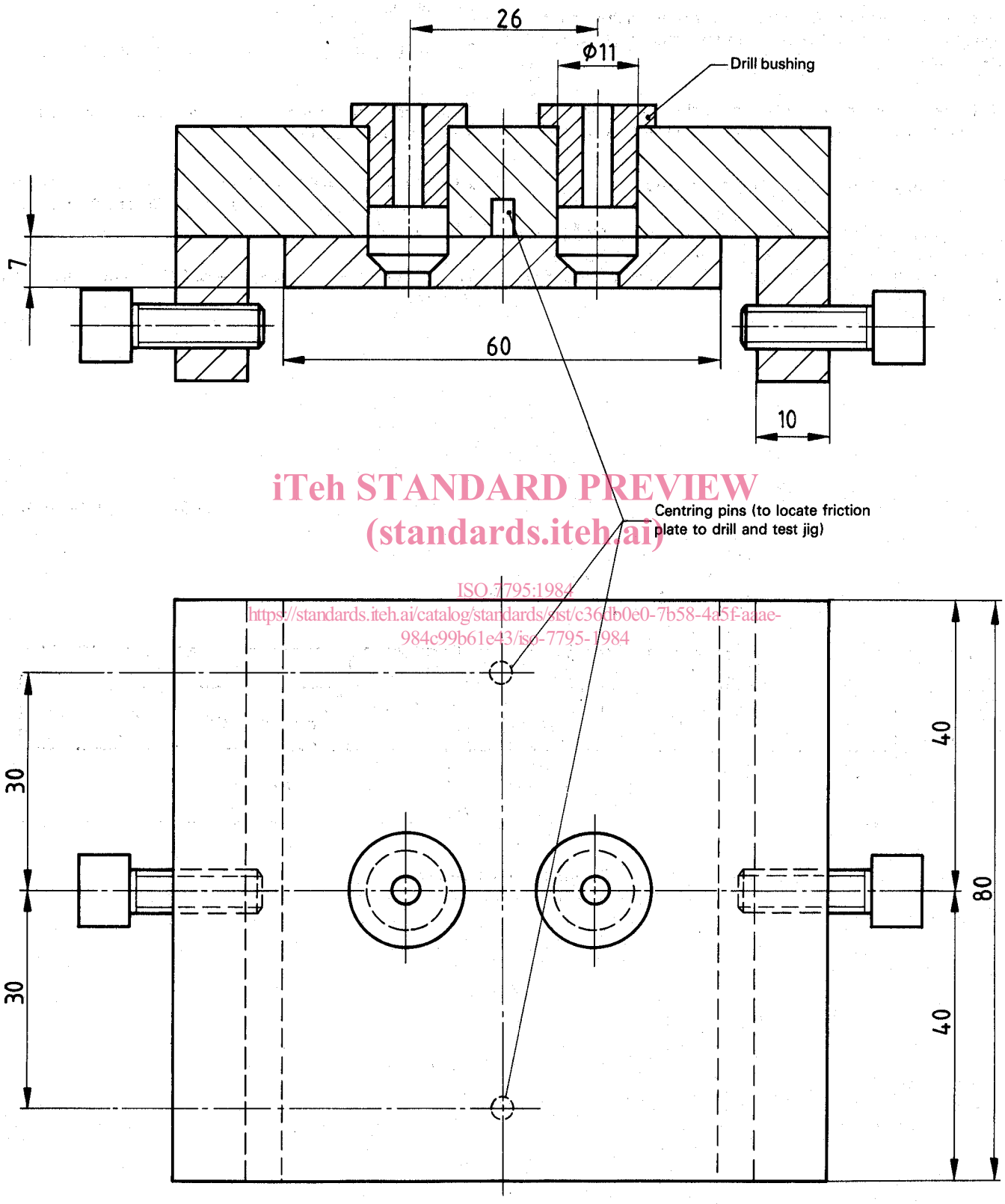

Figure 3 — Drill and test jig

Dimensions in millimetres

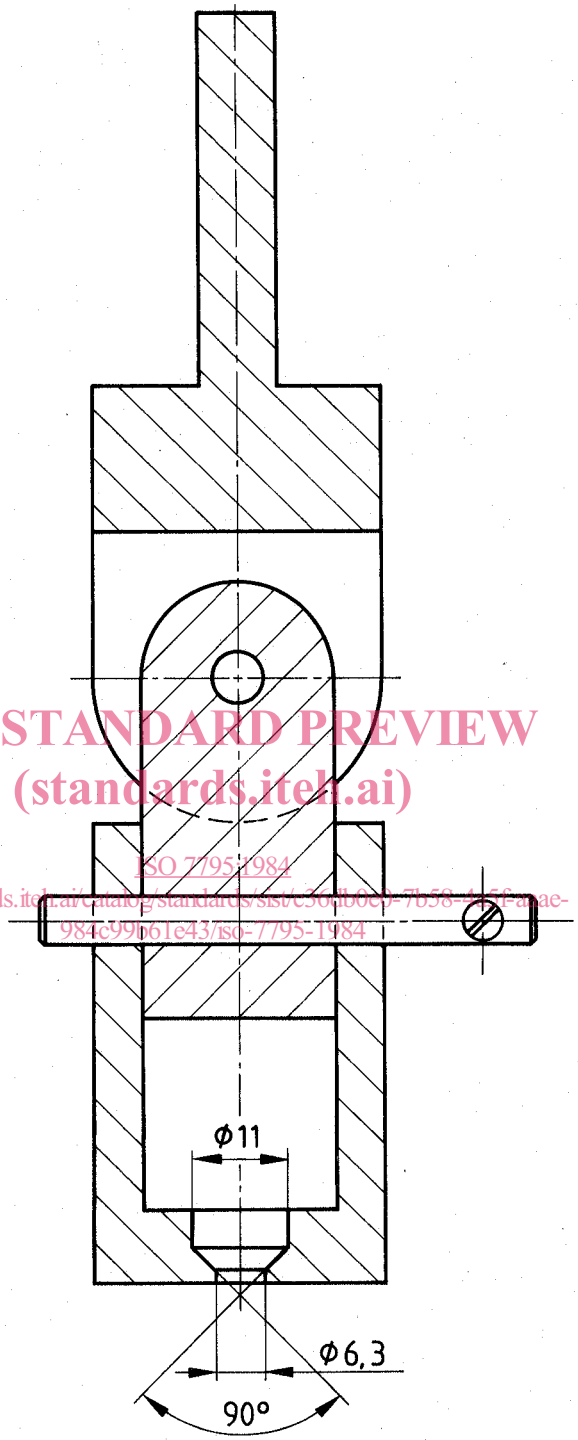

Figure 4 — Pull-out apparatus