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International Standard ISO 5355

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Ski boots for adults — Interfaces for ski bindings for downhill skiing

Chaussures de ski pour adultes — Zones de jonction pour fixations de skis alpins

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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 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 5355 was developed by Technical Committee ISO/TC 83, *Sports and recreational equipment*, and was circulated to the member bodies in November 1980.

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

Austria	India	South Africa, Rep. of
Czechoslovakia	Italy	Spain
Egypt, Arab Rep. of	New Zealand	Switzerland
France	Poland	USA
Germany, F.R.	Romania	USSR

No member body expressed disapproval of the document.

Printed in Switzerland

Ski boots for adults — Interfaces for ski bindings for downhill skiing

1 Scope and field of application

This International Standard lays down the dimensions and specifies the characteristics of the interfaces between ski boots and ski bindings for downhill skiing.

It applies to ski boots size 36 (French size), size 3 1/2 (English size), or size 4 1/2 (American size) and larger, which are used in connection with current systems of downhill ski bindings with attachment at the boot toe and boot heel, the proper release function of which depends on the dimensions and the design of the interfaces.

For ski binding systems that function irrespective of the sole shape or that have different requirements for the sole dimensions, it is not always necessary that the ski boot soles comply with this International Standard in order to achieve the desired degree of safety.

2 References

ISO 527, *Plastics — Determination of tensile properties.*[1]

ISO 1101, *Technical drawings — Geometrical tolerances — Tolerances of form, orientation, location and run-out — General, definitions, symbols indications on drawings.*[2]

ISO/R 1183, *Plastics — Methods for determining the density and relative density (specific gravity) of plastics excluding cellular plastics.*

ISO 2039, *Plastics and ebonite — Determination of hardness by the ball indentation method.*

3 Definitions

3.1 interface : Part of the boot provided for the attachment of or contact with the ski binding.

3.2 median plane : The middle plane of the sole in the longitudinal direction and perpendicular to the bearing surface.

3.3 bearing surface : Surface of the boot sole having contact with a plane on which the boot is standing.

3.4 ski brakes : Devices to stop the ski after release of the binding.

4 Dimensions

Only the dimensions given need be respected. Other dimensions of the boot need not correspond to the figure 1.

1) At present at the stage of draft. (Revision of ISO/R 527-1966.)

2) At the present at the stage of draft. (Revision of ISO/R 1101/1-1969 and ISO/R 1101/2-1974.)

Dimensions in millimetres

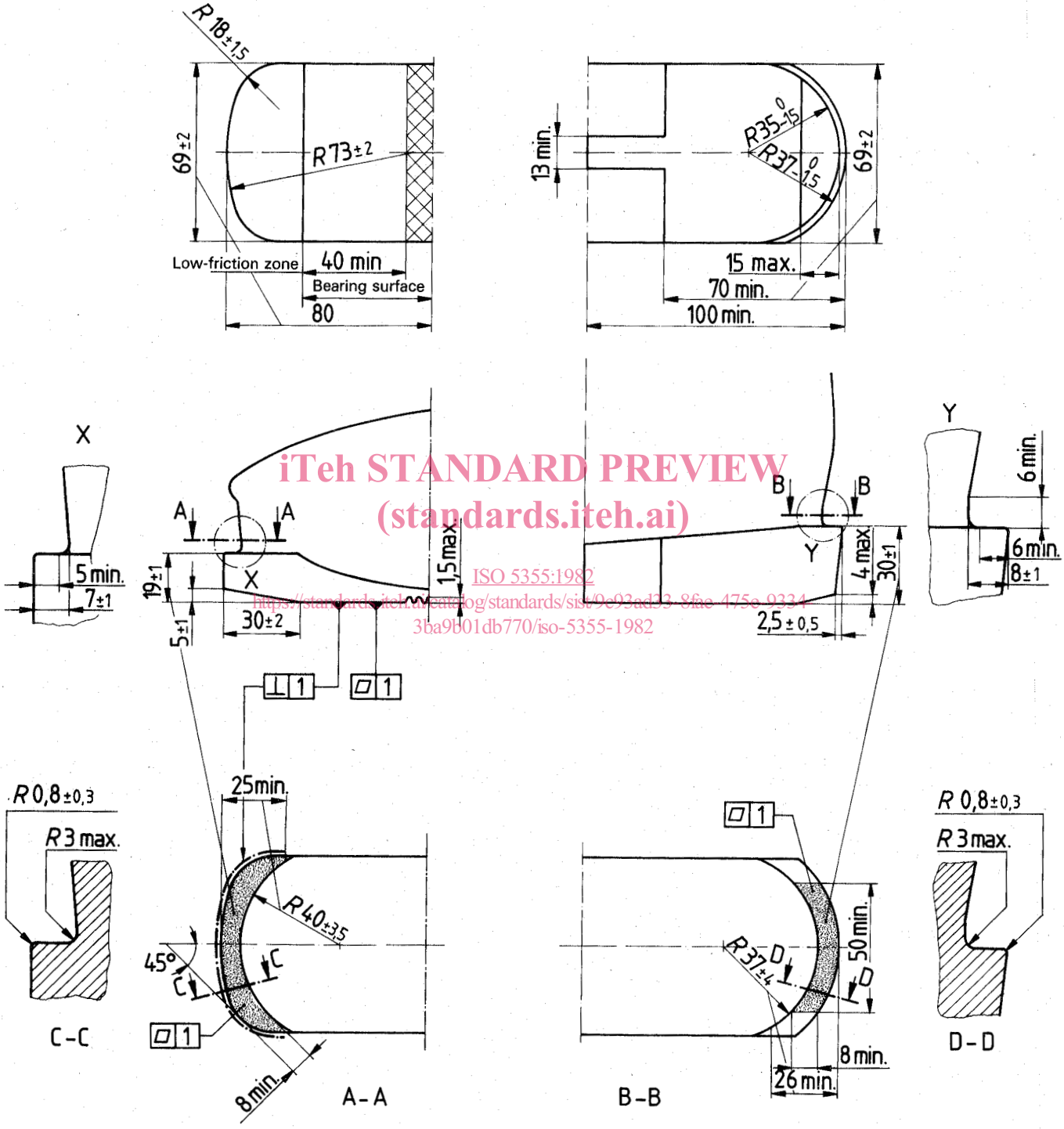
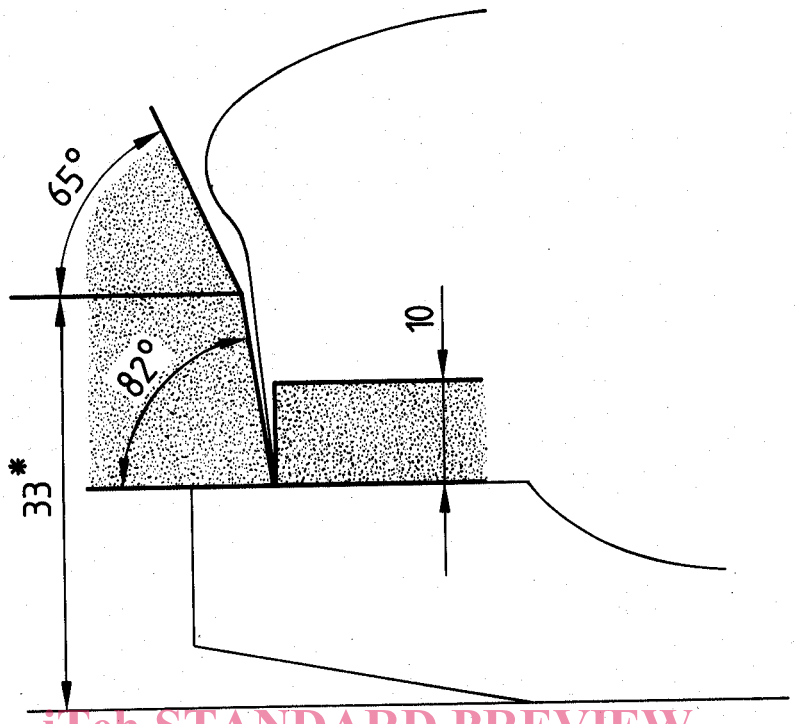


Figure 1 — Dimensions of boot toe and heel

Dimensions in millimetres



* This dimension does not becomes valid until January 1985.

Figure 2 — Free space for the ski binding at the boot toe

Dimensions in millimetres

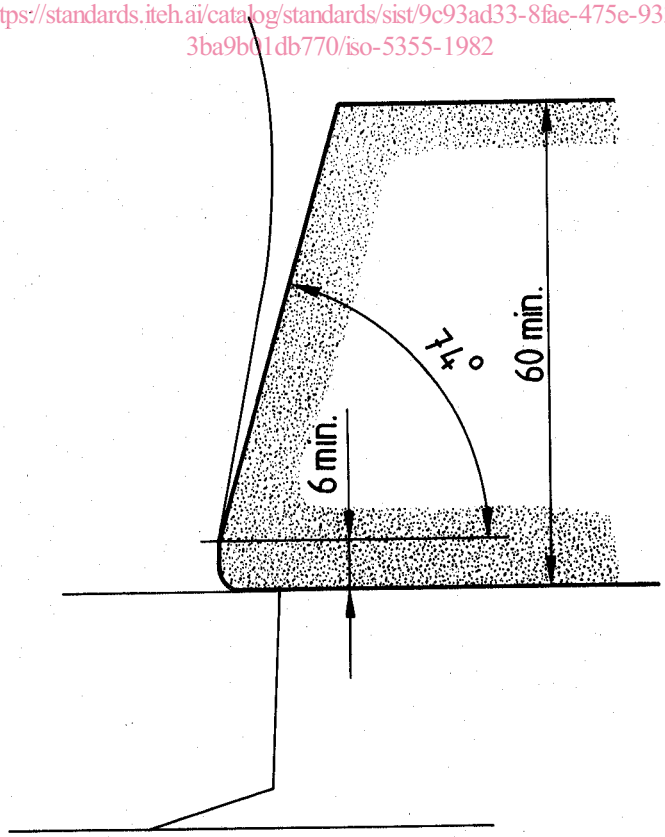


Figure 3 — Free space for the ski binding at the boot heel

5 Design (see figures 1 to 4)

5.1 The dimensions of the sole in the toe and heel areas shall be symmetrical about the median plane.

5.2 The side walls running from a point at least 25 mm from the sole tip at the toe to the area beyond the radii at the bottom of the heel shall be perpendicular or angled inward to the bearing surface.

5.3 Beyond the 25 mm minimum distance from the sole tip, the radius 40 ± 3,5 mm (see figure 1, section A-A) shall be continued as an arc without discontinuity, providing a smooth transition to the radius.

5.4 If lateral grooves of more than 2 mm depth are designed at the heel, there shall be supports complying with figure 4.

5.5 A tread pattern is permitted in the 5 mm × 30 mm front bevelled area and the rear bevelled area.

5.6 The interface zone shall satisfy the following requirements :

a) no material shall protrude perpendicular to the vertical surfaces in the front part of the sole forward of the area 25 mm behind the front of the boot;

b) no material, that would interfere with side-to-side movements of the boot, shall protrude below the zone of the low-friction zone.

5.7 The mounting point for positioning the binding onto the ski shall be indicated by a line on each side of the lower surface of the boot as close to the ski as possible. This line shall be clearly visible and permanent. It shall not be less than 10 mm in length and shall not be more than 5 mm from the mid-point of the length of the space allowed for the foot.

5.8 Within the limit radii indicated in figure 1, section A-A and B-B, every style of boot shaft (exterior surface) symmetrical to the median plane is admissible but no edges shall be produced, i.e. the radii shall continuously pass into one another.

The boot shaft in the front of the boot along the radius 40 ± 3,5 mm shall lie outside the free space for the ski binding (see figure 2).

The rear of the boot shaft shall not extend into the free space for the ski binding, see figure 3, which prolongs the cylindrical portion from a height of 6 mm and a radius of 37 ± 4 mm, to a height of 60 mm minimum above the sole and which has a chord length of 50 mm minimum at this height.

Dimensions in millimetres

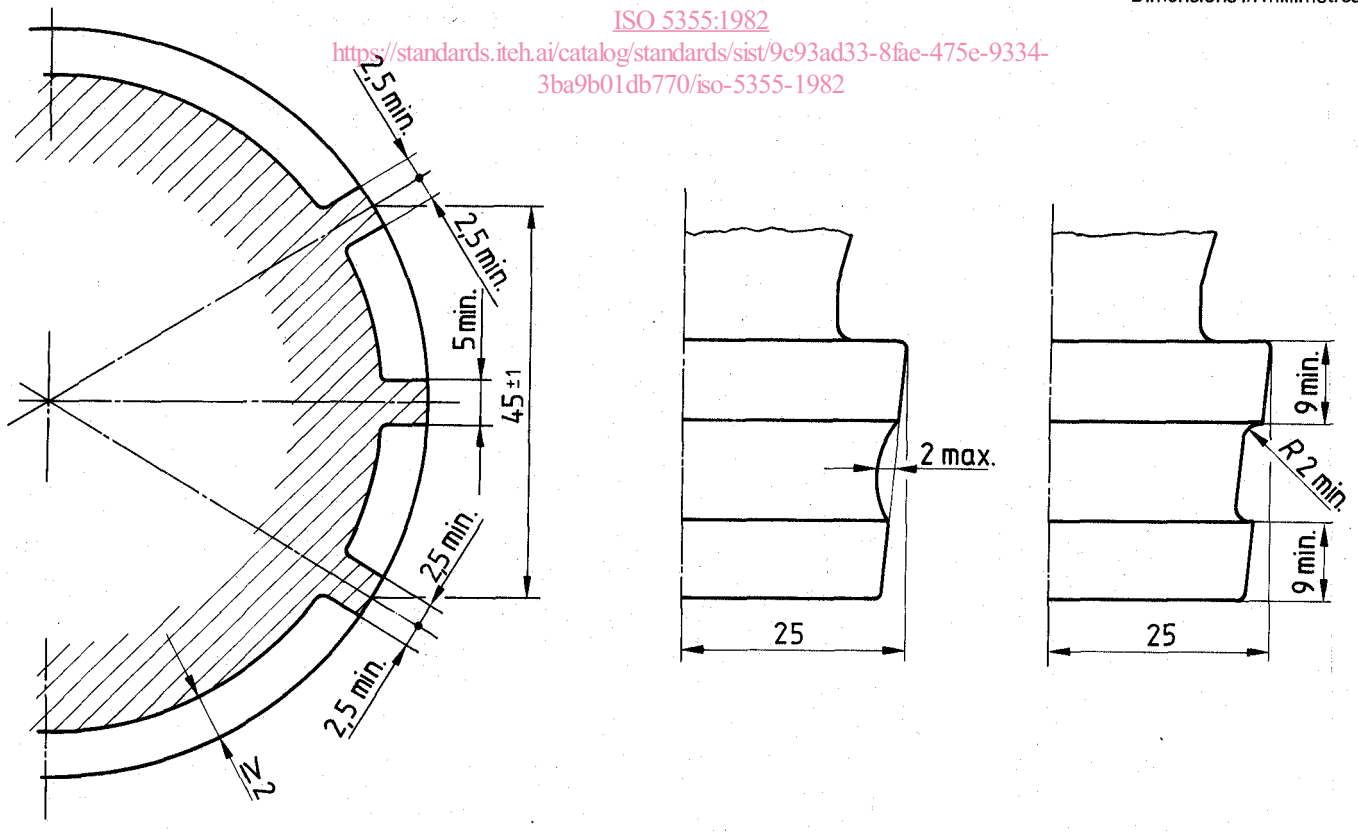


Figure 4 — Lateral supports* and grooves at the heel

* The supports do not become valid until January 1985.

6 Functional characteristics

6.1 Bearing surface

The bearing surface at the heel shall satisfy the following requirements :

a) It shall be suitable for closing the heel part of the binding.

b) It shall provide a correct fit on the bearing plate of the binding.

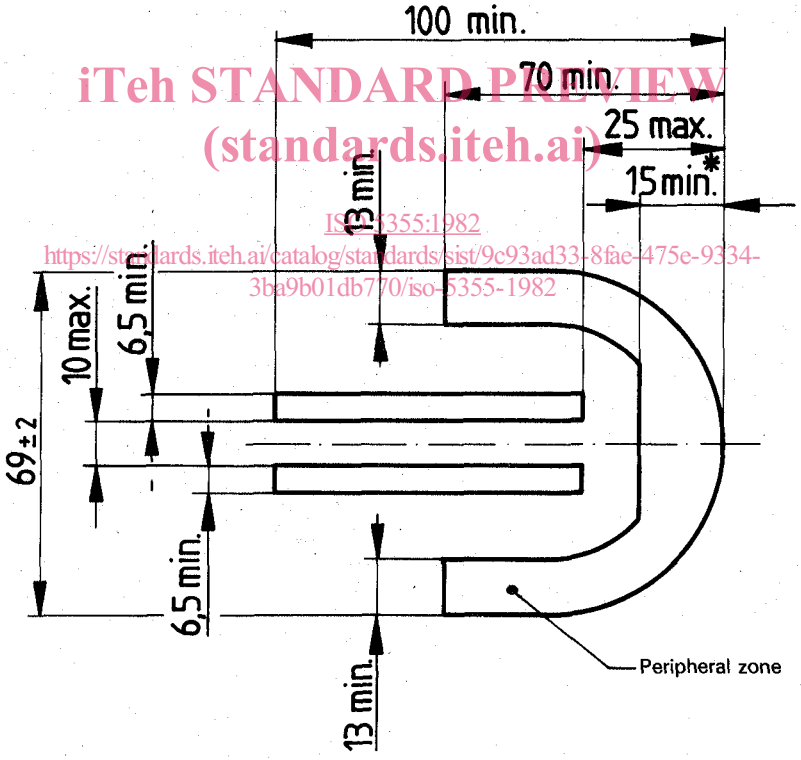
Testing : Move a test cylinder of 10 mm diameter and 20 mm length within the peripheral zone of 13 mm (see figure 5). The test should not reveal a transverse variation in height greater than 1,5 mm in the longitudinal axis of the boot.

c) There shall be no hindrance to the sideways movement of the sole in case of release of the binding.

d) There shall be no interference with the proper functioning of ski brakes.

Testing : Move a test cylinder of 5 mm diameter and of length greater than the breadth of the sole along the longitudinal axis of the boot. The test should not reveal a variation in height greater than 1,5 mm along this axis.

Moreover, smaller bearing surfaces are permissible, for example shaped like a horseshoe as in figure 5. The horseshoe may be interrupted if the requirements of 6.1 b) and d) are satisfied.



* In case of a bevel this dimension shall be 20 mm min.

Figure 5 — Example of a minimum bearing surface at the heel

6.2 Coefficient of friction

The coefficient of dynamic friction between the low-friction zone of the boot and a low-friction element of polytetrafluoroethylene (PTFE) shall have a maximum value of 0,10 rounded off to two decimal places.

Testing

The coefficient of dynamic friction is determined by the ratio of the force F_1, necessary to move a low-friction element over the low-friction zone of the boot, to the test load F_2, which is applied to the low-friction element.

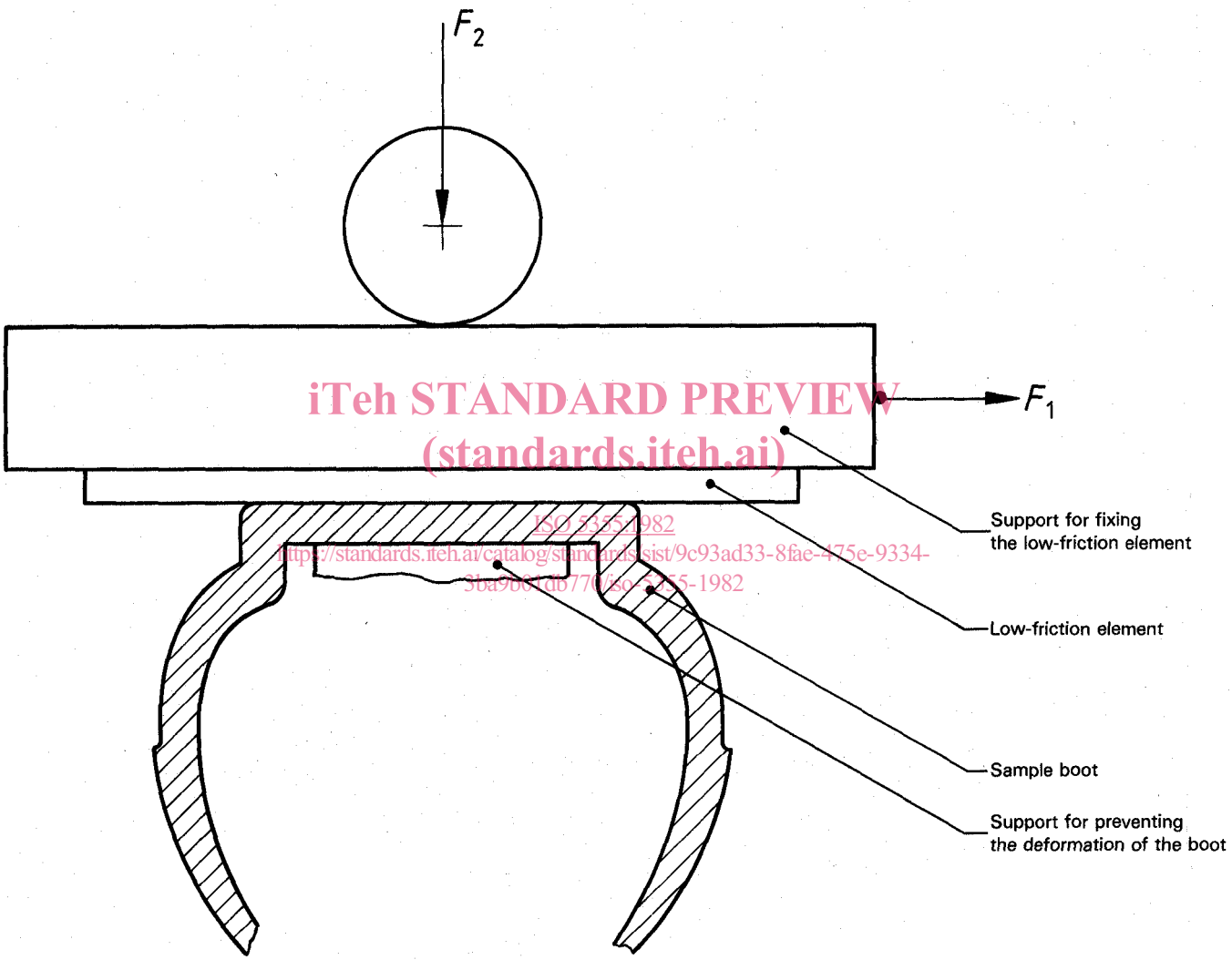


Figure 6 — Test method for determining of the coefficient of dynamic friction

Sample boots : 6 boots of at least 3 different sizes, stored for at least 14 days with the last 12 h of storage before testing under standard atmosphere;

Standard atmosphere : 20 ± 2°C, relative humidity 65 ± 5 %;

Test load F_2 : 500 ± 5 N;

Low-friction element :

a) transverse dimension : 100 mm min.;

b) longitudinal dimension : 40 mm;

c) thickness : 1 mm min.;

d) material : PTFE peeled with the following characteristics :

1) density according to ISO/R 1183, method A

2,18 g/cm³ ± 3 %

2) mean tensile stress according to ISO 527 but with specimen according to figure 7

⩾ 28,5 N/mm²

Dimensions in millimetres

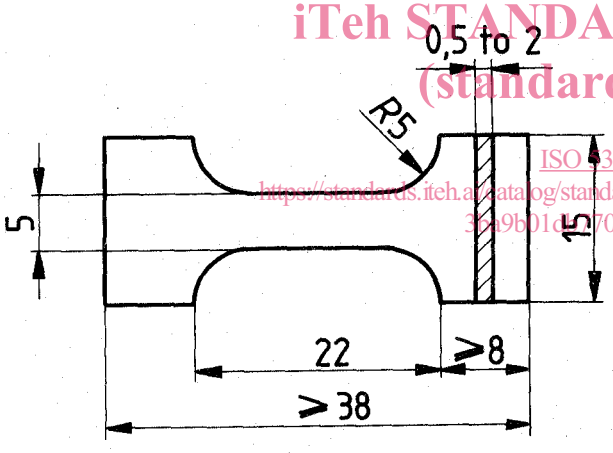


Figure 7 — PTFE Specimen

3) mean percentage elongation according to ISO 527 but with specimen according to figure 7

⩾ 300

4) mean ball-indentation hardness according to ISO 2039 method B

⩾ 2,26 daN/mm²

5) surface profile < 6 µm.

NOTE — The low-friction element may be used for more than 30 measurements until marks of abrasion are visible.

Measuring distance : 8 mm

The speed of the relative movement of the boot to the low-friction element shall be 1 ± 0,2 mm/s.

Submit the low-friction element to 10 preliminary measurements which shall not be taken into account for the evaluation.

Clean the low-friction zone of the sample boot using neutral soap and hot water, rubbing with a soft brush. Allow to dry. After cleaning, the low-friction zone shall be free of grease and soap.

Carry out 5 measurements with each sample boot. The first measurement shall not be taken into consideration. Do not permit deformations of the sole greater than 1 mm which can be avoided by using an appropriate support (see figure 6).

The measurement error for the four significant measurements shall not exceed ± 5 %.

Clean the low-friction element before measuring the next sample boot by rubbing with a clean soft cloth. After cleaning, the low-friction element shall be free of grease.

Determine the coefficient of dynamic friction by taking the mean value of the 24 measurements (6 boots × 4 measurements).