



BSI Standards Publication

## **Alpine and touring ski-bindings — Test soles for ski-binding tests**

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# National foreword

This British Standard is the UK implementation of [ISO 9838:2019](#). It supersedes [BS ISO 9838:2015](#), which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee SW/136, Sports, playground and other recreational equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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# INTERNATIONAL STANDARD

**ISO**  
**9838**

Fourth edition  
2019-03-25

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## **Alpine and touring ski-bindings — Test soles for ski-binding tests**

*Fixations de skis alpins et de randonnée — Semelles d'essai pour les  
essais de fixations de skis*



Reference number  
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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 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 83, *Sports and other recreational facilities and equipment*, Subcommittee SC 4, *Snowsports equipment*.

This fourth edition cancels and replaces the third edition ([ISO 9838:2015](http://www.iso.org/iso/9838:2015)), which has been technically revised. The main changes compared to the previous edition are modified dimensions and material properties regarding test sole form T.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).



# Alpine and touring ski-bindings — Test soles for ski-binding tests

## 1 Scope

This document defines test soles representing

- an alpine ski-boot (form A) or at least the bottom part of it to be used for testing alpine ski-bindings for alpine skiing in accordance with [ISO 9462](#) and [ISO 9465](#), and
- a touring ski-boot (form T) or at least the bottom part of it to be used for testing touring ski-bindings for touring skiing in accordance with [ISO 13992](#) and [ISO 9465](#).

NOTE Ski-boots have their own International Standards (ISO 5355 and [ISO 9523](#)) that allow relatively large tolerances in defining the test sole which are generally believed to be suitable for on-slope use by skiers, but too large for reproducible laboratory measurements.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[ISO 868](#), *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness)*

ISO 5355, *Alpine ski-boots — Requirements and test methods*

[ISO 9462](#), *Alpine ski-bindings — Requirements and test methods*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5355 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1

#### test sole form A

test sole for testing alpine ski-bindings

### 3.2

#### test sole form T

test sole for testing touring ski-bindings

### 3.3

#### test sole type A

test sole to test ski-bindings suitable for ski-boots for adults

Note 1 to entry: Ski-boots for adults are defined in ISO 5355.

Dimensions in millimetres

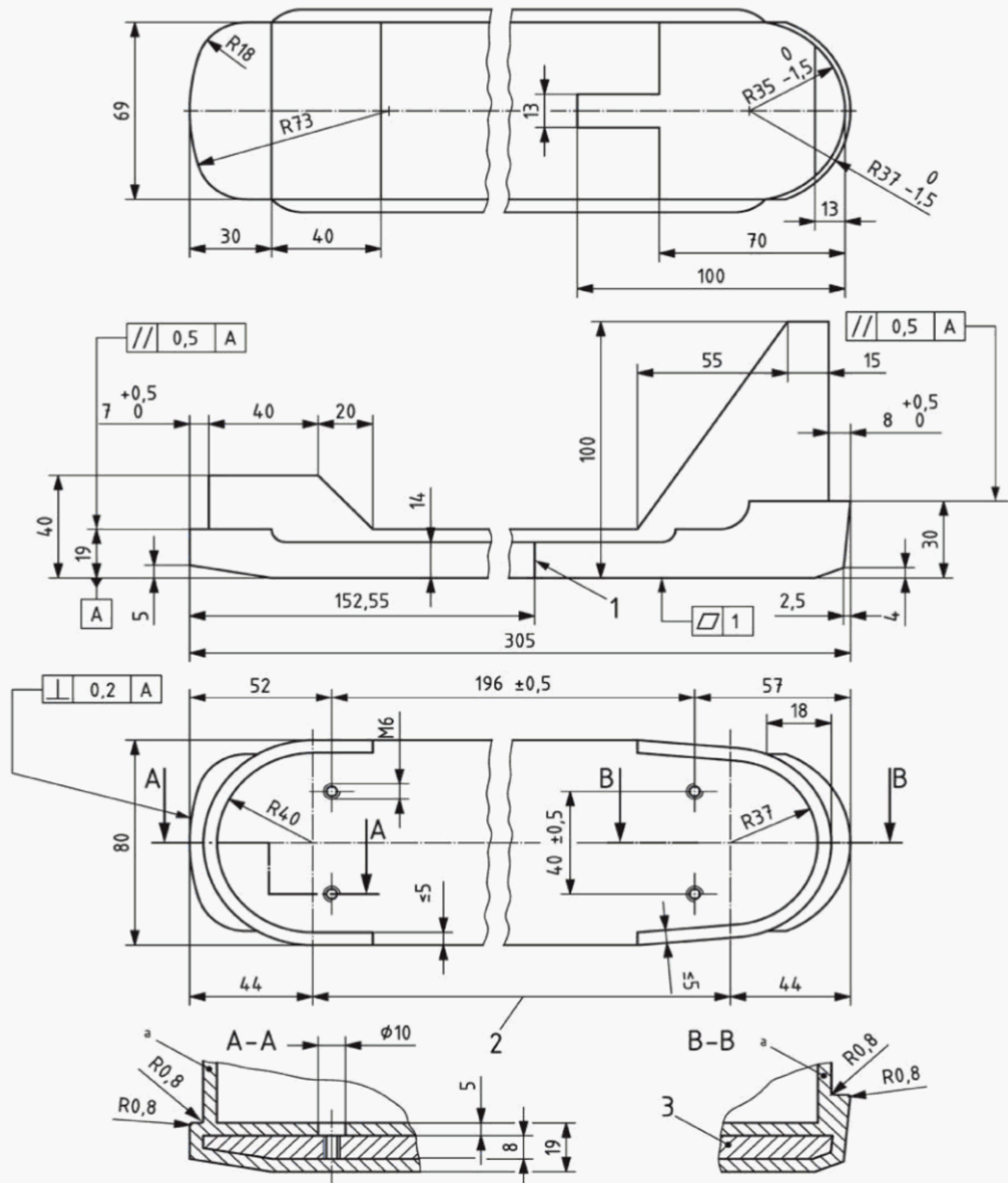
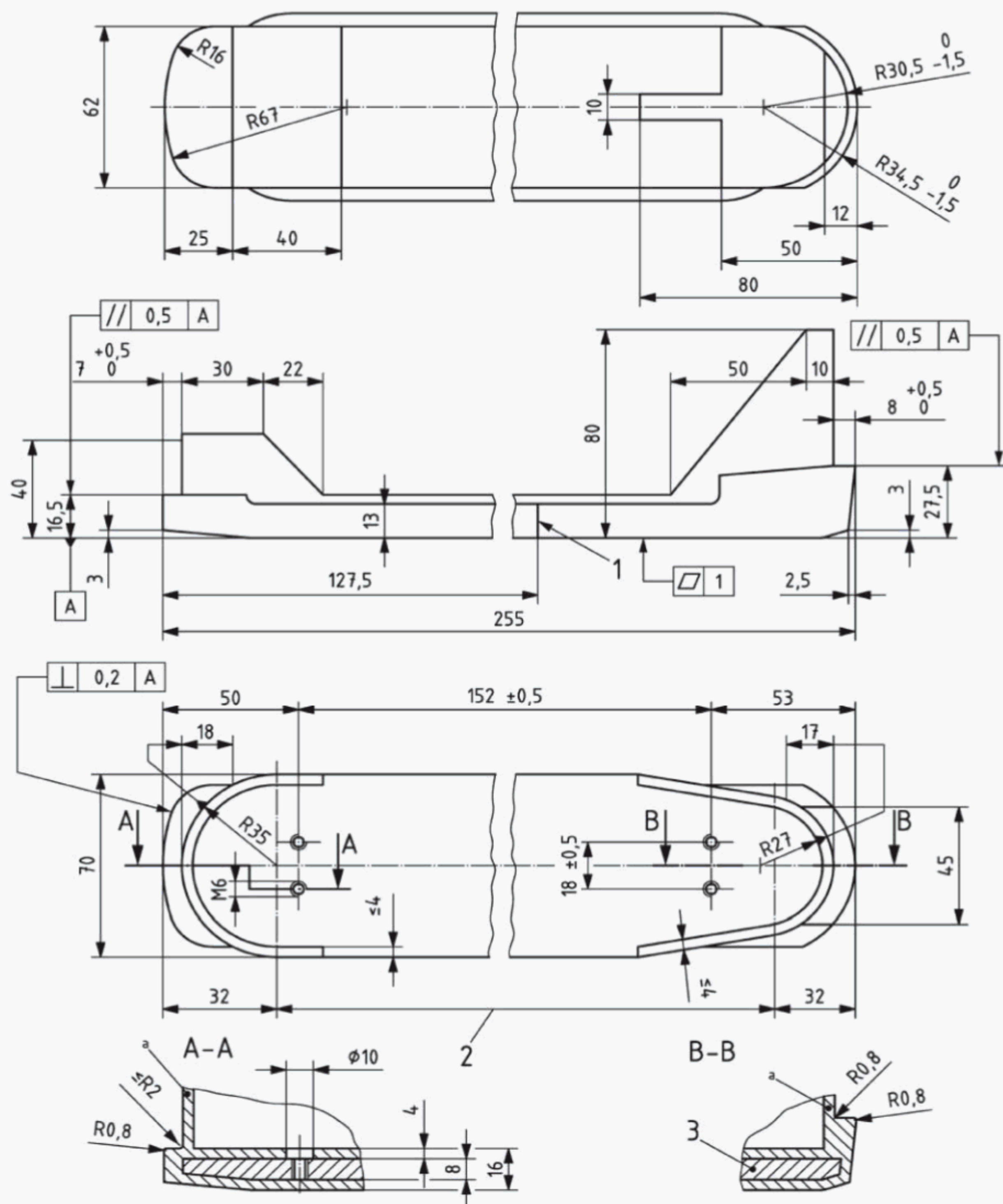


Figure 1 — Test sole form A type A



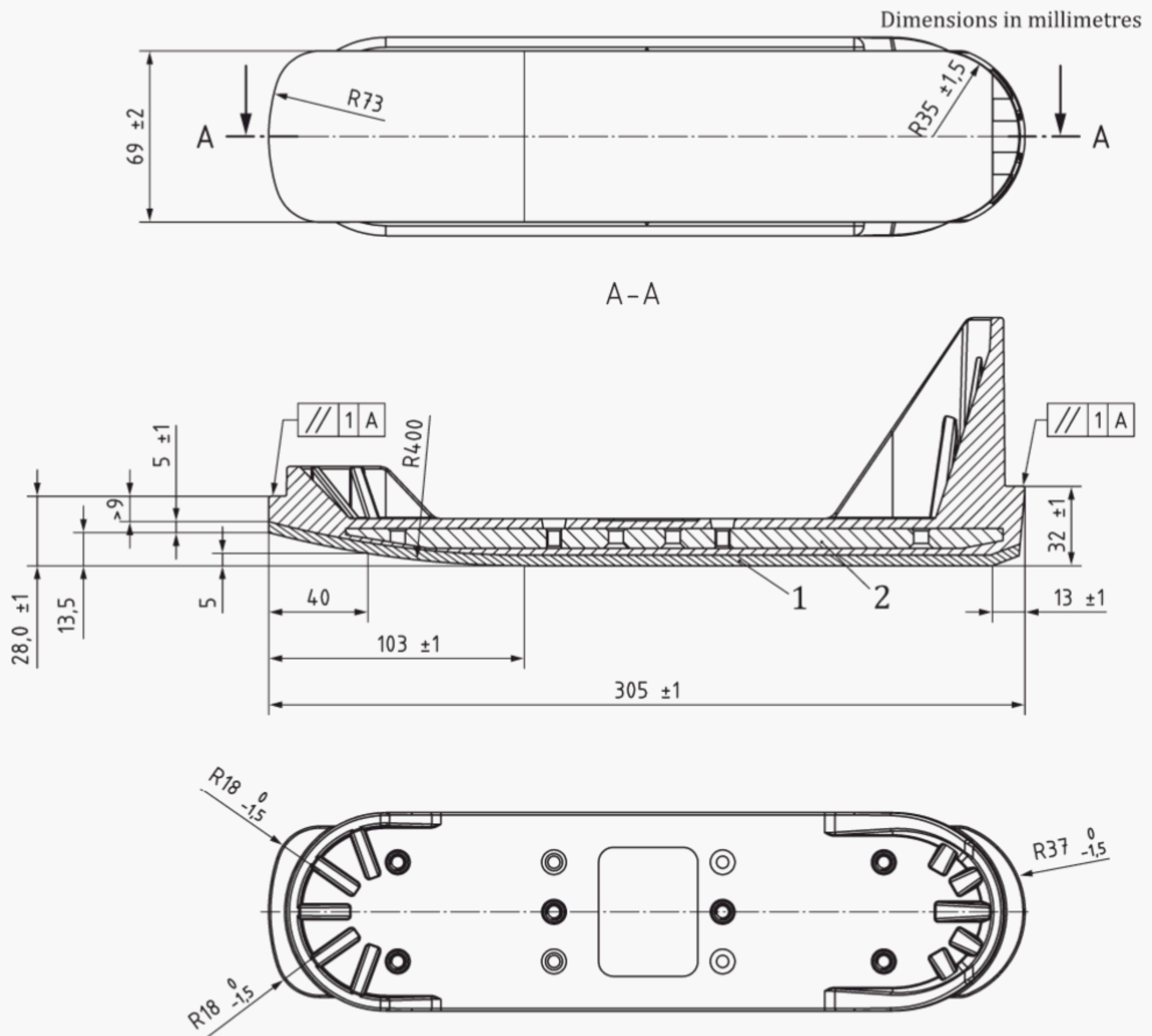
Dimensions in millimetres



# Key

- 1 central mark
- 2 flat area
- 3 reinforcement plate
- a See [Clause 4](#).

Figure 2 — Test sole form A type C



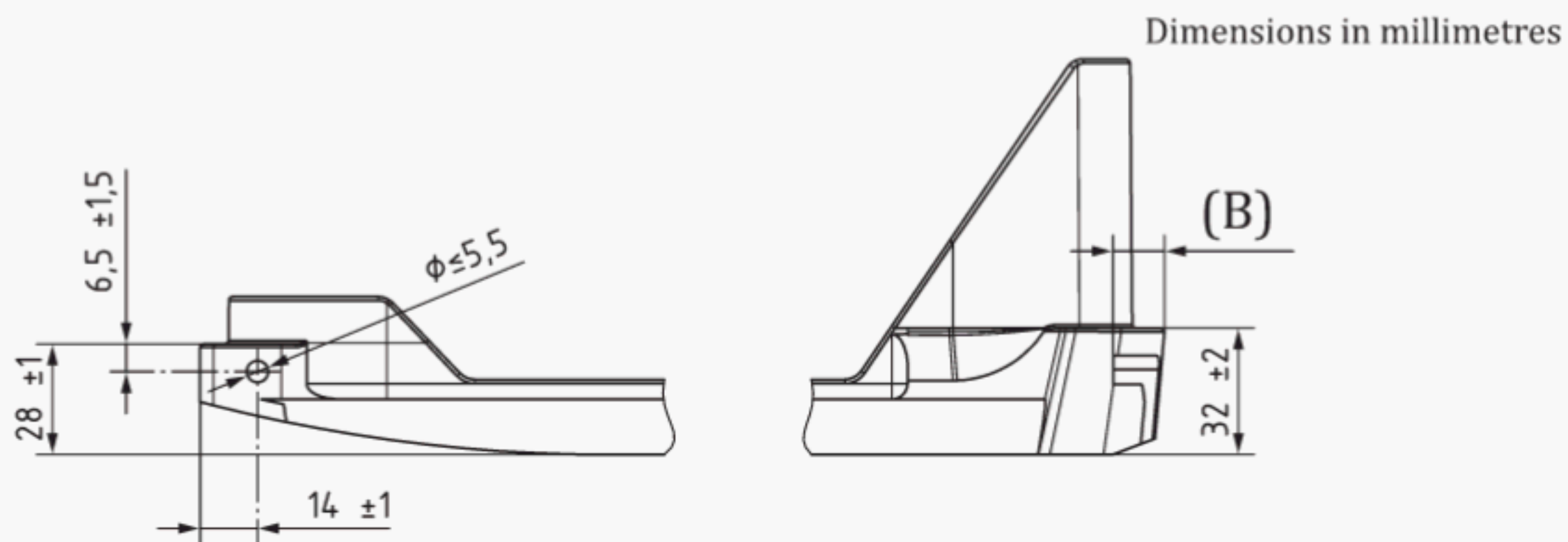
#### Key

- 1  $68 \pm 5$  Shore A rubber
- 2 reinforcement plate

**Figure 3 — Test sole form T**

To simulate inserts of boots soles, the test sole shall have holes and cut outs with dimensions according to [Figure 4](#) and [Figure 5](#).

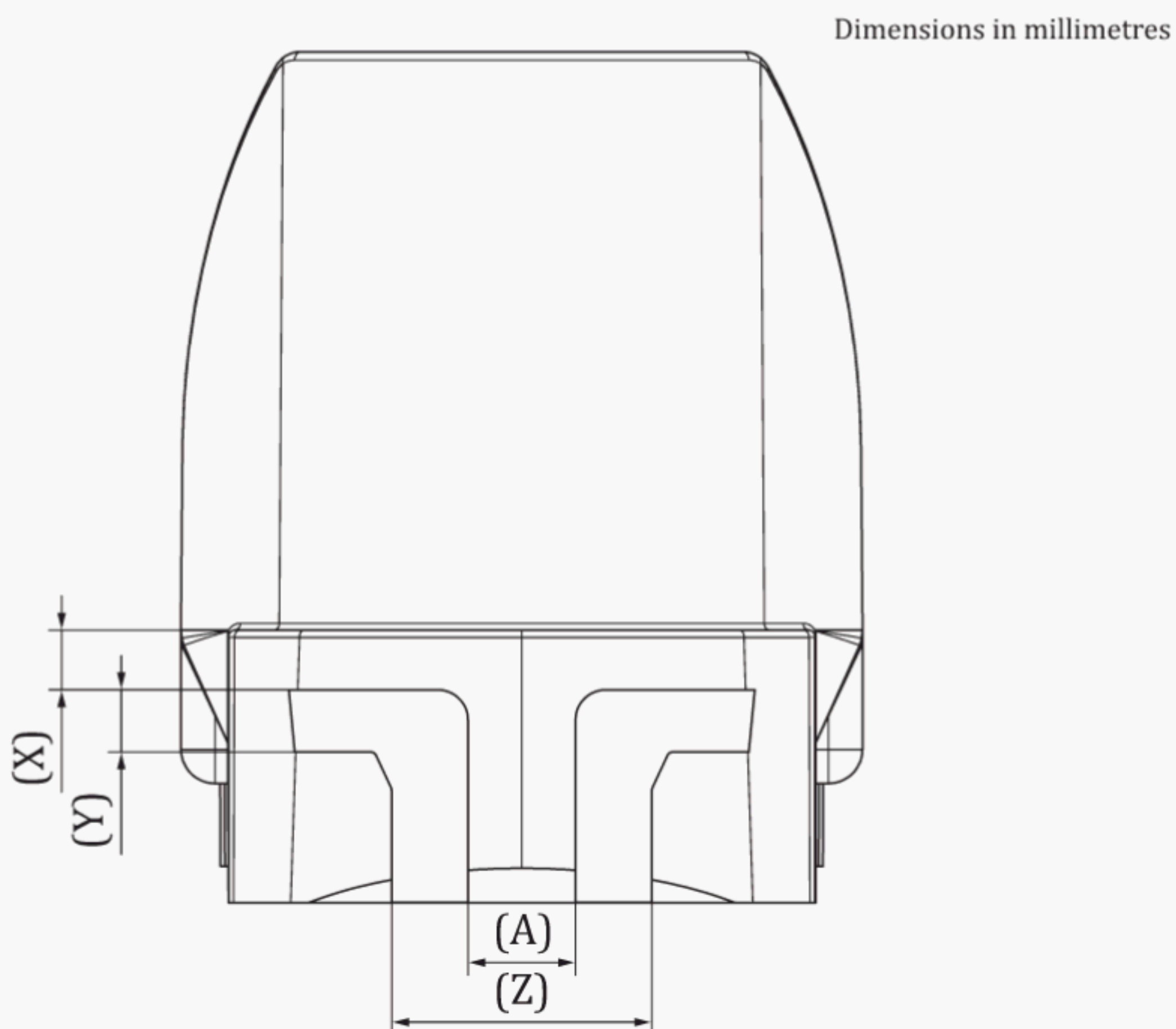




**Key**

(B)  $(13 -0/+1)$  mm

**Figure 4 — Test sole form T with cut out for insert position**



**Key**

- (A)  $(12,0 \pm 0,5)$  mm
- (X)  $(7,5 -0,5/+0)$  mm
- (Y)  $(7,5 \pm 0,5)$  mm
- (Z)  $(30,0 \pm 1)$  mm

**Figure 5 — Test sole with cut out for insert position at heel region**

## 6 Mechanical properties

### 6.1 Flexional stiffness

Place the basic test sole or the variable test sole on two supports as shown in [Figure 6](#). The radius of the supports shall be  $10\text{ mm} \pm 1\text{ mm}$  and the test sole shall be supported over its whole width. Load the test sole vertically for 10 s at its middle by means of a contact ram with a radius of 10 mm and record the deflection under load, eliminating the effect of compressing the rubber sole. Record the residual deflection 20 s after releasing. Test at  $23\text{ °C} \pm 5\text{ °C}$ . The load,  $F_1$ , shall be the following:

- type A:  $F_1 = 400\text{ N}$ ;
- type C:  $F_1 = 200\text{ N}$ .

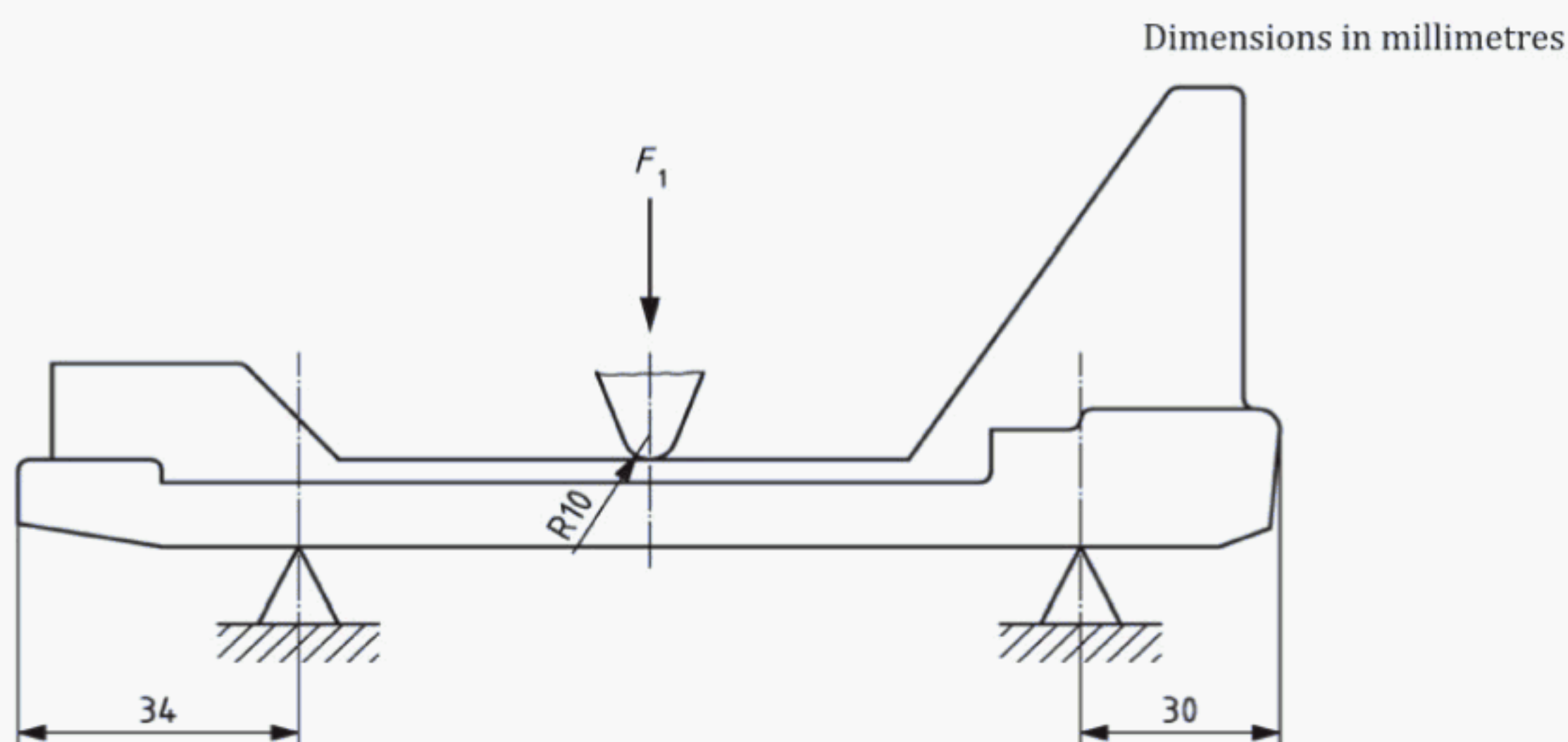


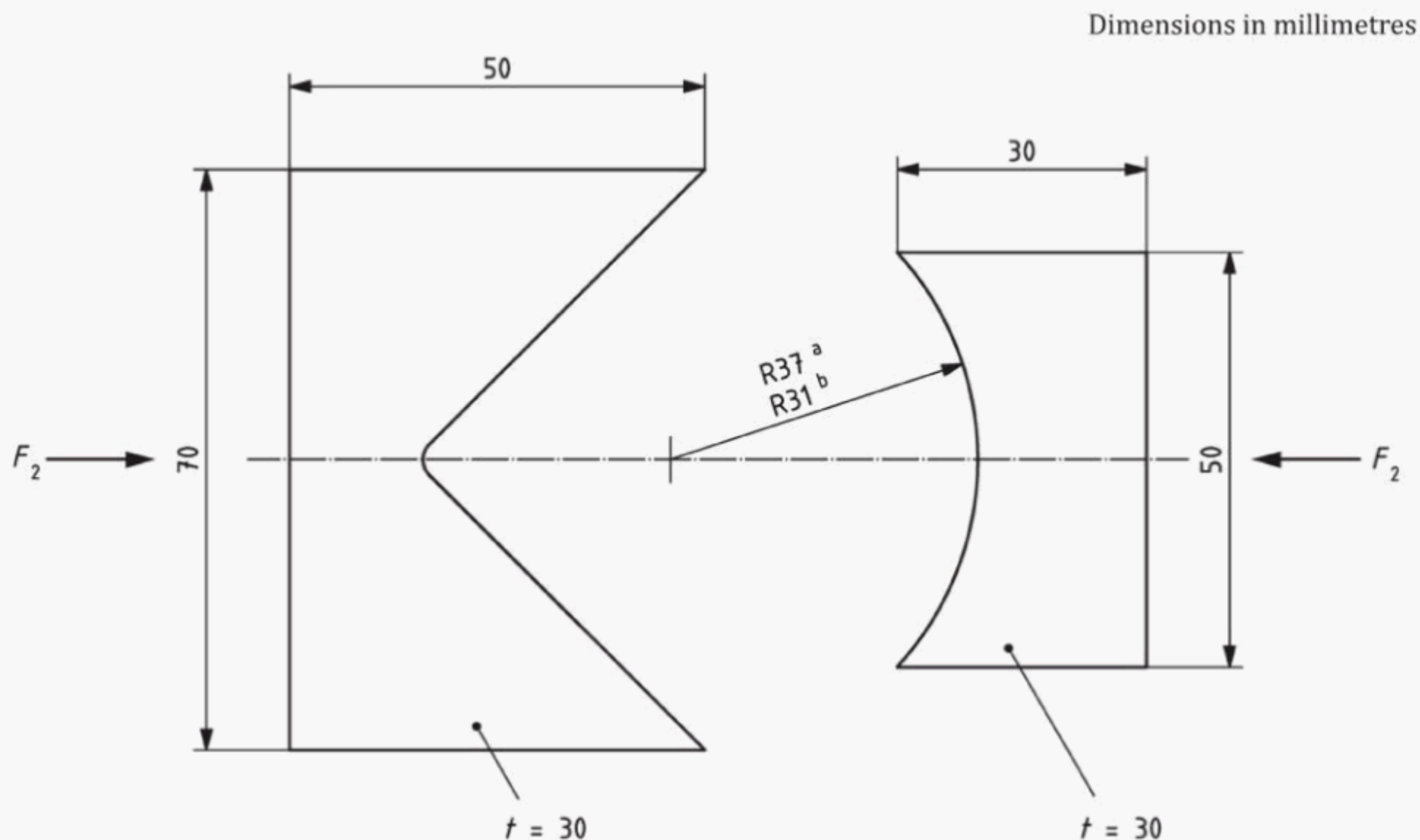
Figure 6 — Test of flexional stiffness

### 6.2 Compressional stiffness

Place the test sole in a device of aluminium or steel as shown in [Figure 7](#). Compress the test sole for 10 s along its length axis and record the deformation under load. Record the residual deformation 20 s after releasing. Test at  $23\text{ °C} \pm 5\text{ °C}$ . The load,  $F_2$ , shall be the following:

- type A:  $F_2 = 500\text{ N}$ ;
- type C:  $F_2 = 250\text{ N}$ .





**Key**

- $t$  thickness
- $a$  Type A.
- $b$  Type C.

**Figure 7 — Device for testing compressional stiffness**

## 6.3 Hardness

### 6.3.1 Form A types A and C

A measurement of the Shore D hardness shall be carried out on the sole/binding interface in accordance with [ISO 868](#). Test at  $23\text{ °C} \pm 5\text{ °C}$ .

### 6.3.2 Form T

A measurement of the Shore A hardness shall be carried out on the rubber sole in accordance with [ISO 868](#). Test at  $23\text{ °C} \pm 5\text{ °C}$ .

## 6.4 Coefficient of friction

### 6.4.1 Form A types A and C

A measurement of the coefficient of friction shall be carried out in accordance with ISO 5355.

### 6.4.2 Form T

A measurement of the coefficient of friction shall be carried out in accordance with ISO 5355.

## 6.5 Coefficient of thermal expansion

The difference in length of the test sole at temperatures of 23 °C and –20 °C shall be measured.

## 6.6 Requirements

The requirements for the properties given in 6.1 to 6.5 shall be as indicated in Table 2.

**Table 2 — Requirements**

Dimensions in millimetres

Deflection		Deformation under compression		Shore D hardness of TPU	Coefficient of friction		Coefficient of dilation K <sup>-1</sup>
mm loaded	mm residual	mm loaded	mm residual		form A types A and C	form T	
≤ 2,5	≤ 0,5	≤ 0,5	≤ 0,2	50 + 5/0	0,065 ± 0,010	0,2 ± 0,03	≤ 10 <sup>-4</sup>

## 7 Long-term use

A test sole can be used for tests in accordance with [ISO 9462](#) as long as it meets the requirements of this document. Compliance shall be rechecked regularly, particularly with respect to

- dimensions (wear of the contact area with bindings), and
- friction (presence of binding lubricants, scratches, etc.).



## Bibliography

- [1] [ISO 9465](#), *Alpine ski-bindings — Lateral release under impact loading — Test method*
- [2] [ISO 9523](#), *Touring ski-boots for adults — Interface with touring ski-bindings — Requirements and test methods*
- [3] [ISO 13992](#), *Alpine touring ski-bindings — Requirements and test methods*





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