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2025-02

Alpine ski boots with improved walking soles — Interface with alpine ski-bindings — Requirements, test methods and marking

Chaussures de ski pour skis alpins dotées de semelles de marche améliorées — Zone de contact avec les fixations de ski alpin — Exigences, méthodes d'essai et marquage

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Foreword

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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).

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

This second edition cancels and replaces the first edition (ISO 23223:2021) and the corrected version 2022-10, which have been technically revised.

The main changes are as follows:

— new Figures 22 and 23 were added for better explanation of the tests described in 4.3.5.4.3;

— a reference plane (in Figure 1 and Figure 3 and Figure C.1 and Figure C.2) was defined;

— changes in some dimensions of heel area of boot type C in Figure 3 and in Figure 19 were made;

— changes in some dimensions/tolerances in Figure 11 were made;

— 6.1 was modified, mentioning information by the manufacturer in digital version;

— former Annex C was deleted (former Annex D is now Annex C).

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.

Alpine ski boots with improved walking soles — Interface with alpine ski-bindings — Requirements, test methods and marking

1 Scope

This document specifies requirements, test methods and marking for alpine ski-boots with improved walking soles that are used with systems of alpine ski-bindings for improved walking soles with attachment at the boot front and boot rear, the proper release function of which depends on the dimensions and design of the interfaces.

Alpine ski boots with improved walking soles are intended to a better walkability without affecting the function of the alpine ski binding designed for improved walking soles.

This document is applicable to ski-boots of sizes 15,0 and larger [Types A (Adults) and C (Children)] in the Mondopoint system (see Annex A).

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 527-1, *Plastics — Determination of tensile properties — Part 1: General principles*

ISO 527-2, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics*

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

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

ISO 1183-1, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pycnometer method and titration method*

ISO 1183-2, *Plastics — Methods for determining the density of non-cellular plastics — Part 2: Density-gradient column method*

ISO 1183-3, *Plastics — Methods for determining the density of non-cellular plastics — Part 3: Gas pycnometer method*

ISO 2039-1, *Plastics — Determination of hardness — Part 1: Ball indentation method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
interface
part of the ski-boot intended to be in contact with the ski-binding

3.2
front interface
part of the ski-boot intended to be in contact with the front binding

3.3
rear interface
part of the ski-boot intended to be in contact with the rear binding

3.4
free space
space intended to avoid contact between ski-boot and binding, especially during step in/step out or release

3.5
bearing surfaces
front and rear surfaces of the boot sole that are in contact with the ski binding

3.6
median plane
middle plane of the sole, longitudinal and perpendicular to the bearing surface

3.7
ski-brake
device to stop the ski after release of the binding

3.8
walking sole
sole with hard and soft materials and an optimized profile, intended to a better walkability without affecting the function of the alpine ski binding

3.9
low-friction zone
area of the bearing surfaces that has a low-friction coefficient

4 Requirements and test methods

4.1 General

If no specific test method is indicated, check the characteristics as appropriate, e.g. by measurement.

If not otherwise indicated, execute the testing under standard atmosphere 23/50 in accordance with ISO 554 with ordinary tolerances.

4.2 Dimensions and evenness

4.2.1 Dimensions

The boot toe and heel shall conform with Figure 1, Figure 2, Figure 3, Figure 4 and Figure 5.

All dimensions shall be within the indicated tolerances. However, relevance to safety varies in importance depending on the indicated dimensions.

Measurements in gauge shall be done with a preload of 100 N for Type A and 50 N for Type C, by inserting a steel cylinder into the ski-boot itself.

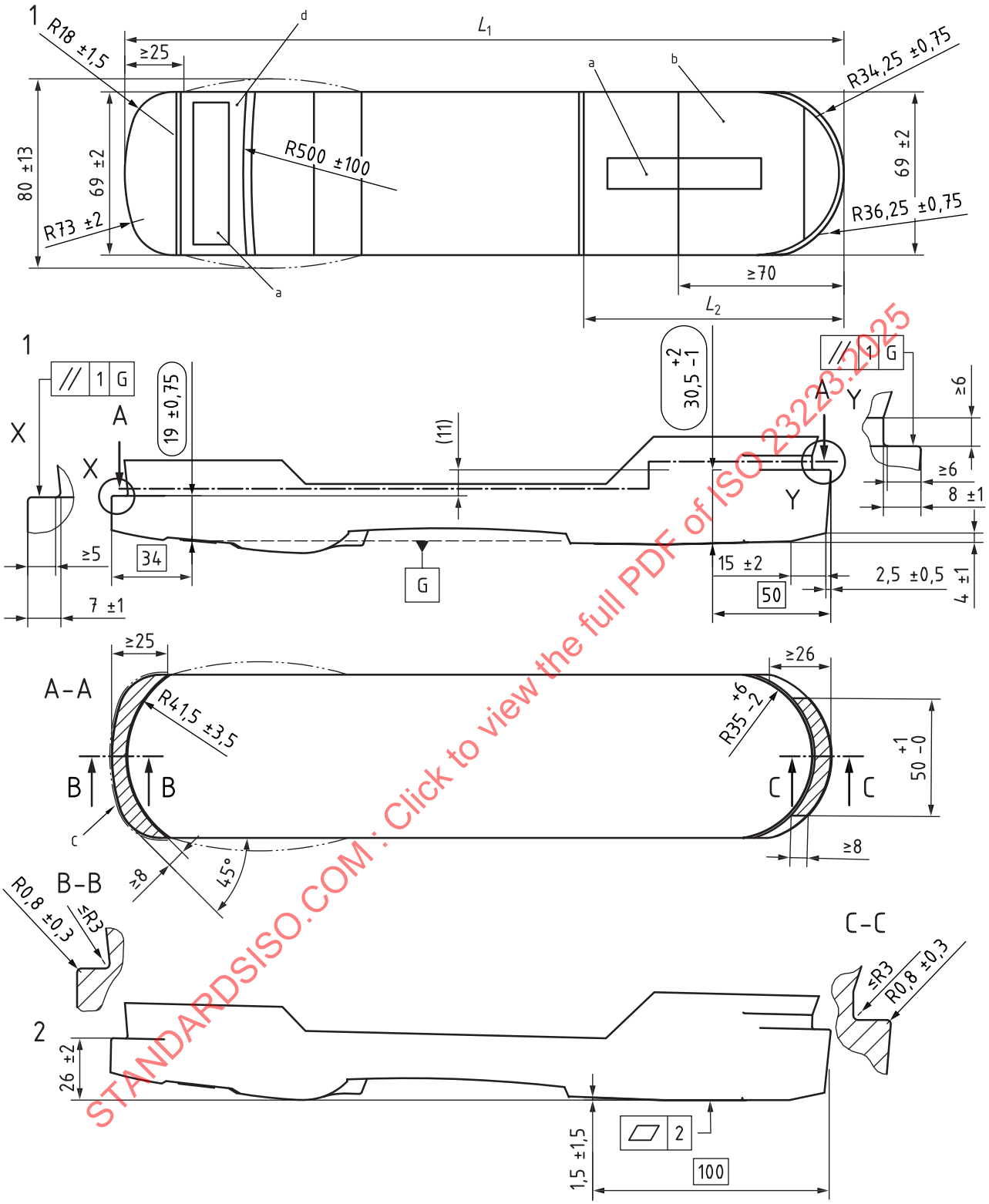
Looking at several dimensions (for dimensions of the 2nd degree, see Annex B) a deviation from the tolerances may be accepted, provided that the following requirements are respected:

a) No limitations of function shall arise with all marketable and critical bindings.

b) The tolerances shall be respected at the next possible chance (e.g. reconstruction of a tool).

Dimensions for boots with inserts working with pin bindings are given in this document.

Dimensions in millimetres



Key

1 position: in gauge

2 position: flat on table

G reference plane (see Figure C.1)

L_1 sole length

L_2 heel length

a Low-friction zone in accordance with 4.3.5.1.

b Bearing surface.

c Area in which the tolerance of perpendicularity is valid (see 4.3.3.1).

d Section of recessed soft component not in contact with the binding.

NOTE 1 Shaded areas, including areas with index c, are those in which the tolerances of evenness and the dimensions 19 ± 0,75 and $30{,}5^{+2}_{-1}$ are valid.

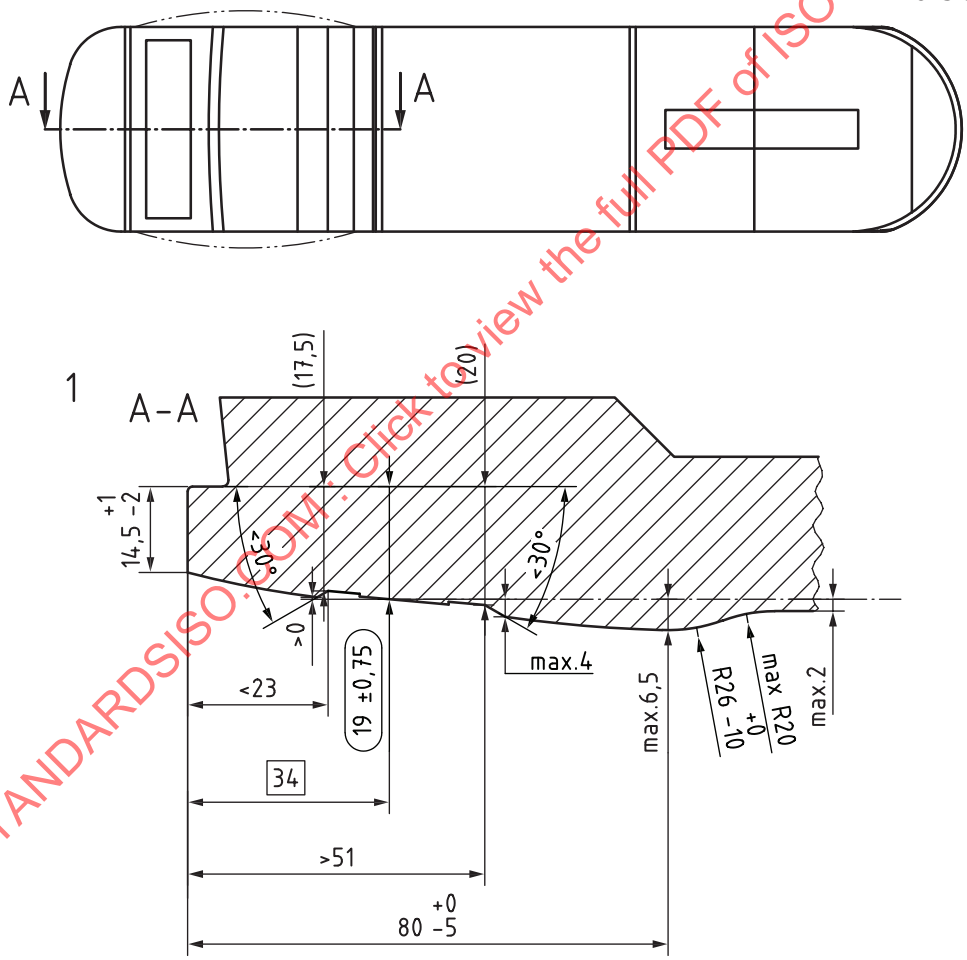
NOTE 2 (11) is the vertical distance between shaded areas for construction purposes according to ISO 5355.

L_1	< 300	≥ 300
L_2	≥ 100	≥ 110

Figure 1 — Dimensions of boot toe and heel, Type A

Figure 2 provides all the key dimensions (nominal) to build new boots. The gauge (see Annex C) can be used to check whether a boot is in conformity with this document.

Dimensions in millimetres



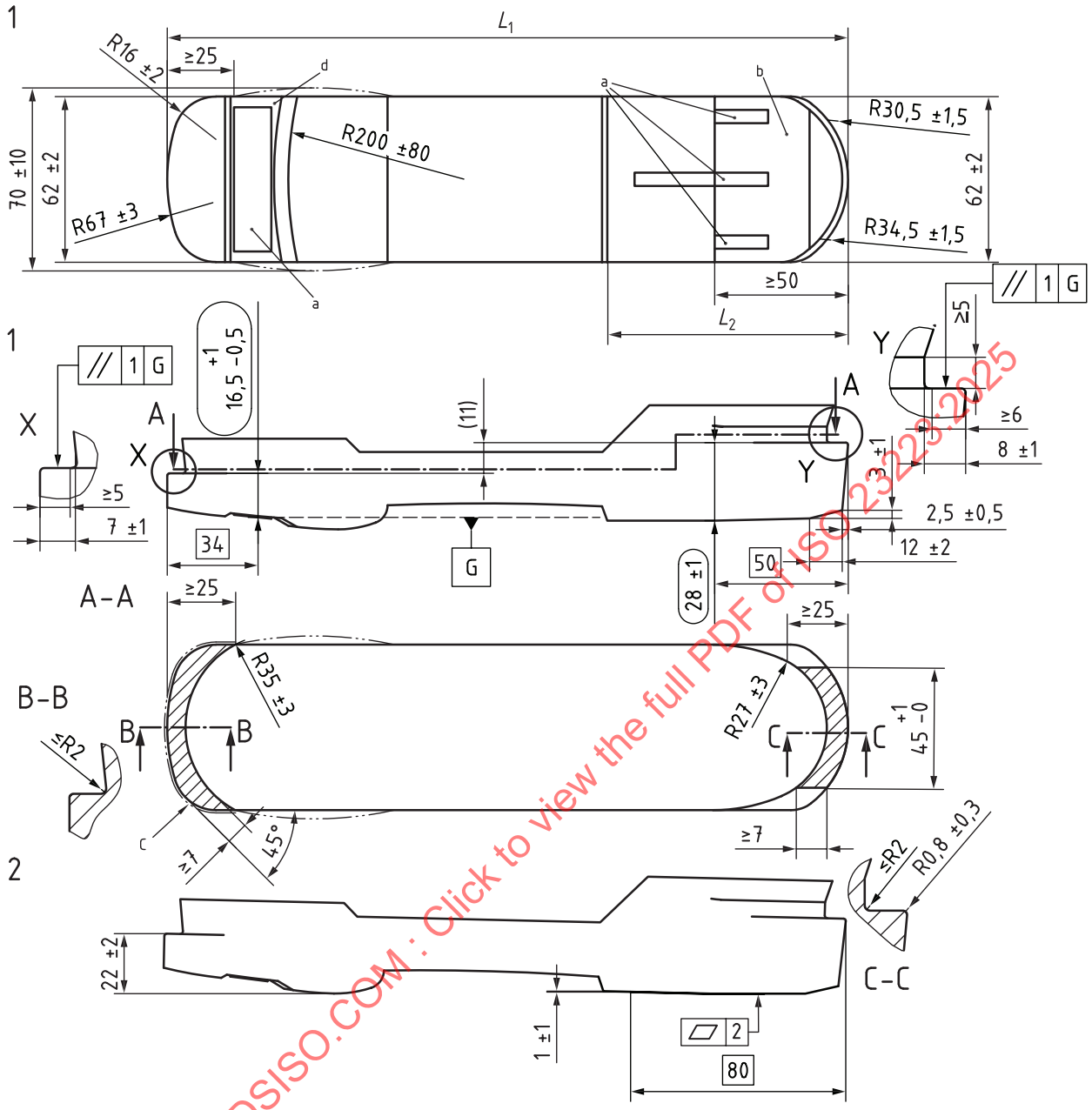
Key

1 position: in gauge

NOTE Some of these measurements are of 2nd degree, see Annex B.

Figure 2 — Detailed dimensions of boot, Type A

Dimensions in millimetres



Key

1 position: in gauge
2 position: flat on table
G reference plane (see Figure C.2)
L_1 sole length
L_2 heel length
a Low-friction zone in accordance with 4.3.5.1.
b Bearing surface.

c Area in which the tolerance of perpendicularity is valid (see 4.3.3.1).

d Section of recessed soft component not in contact to binding.

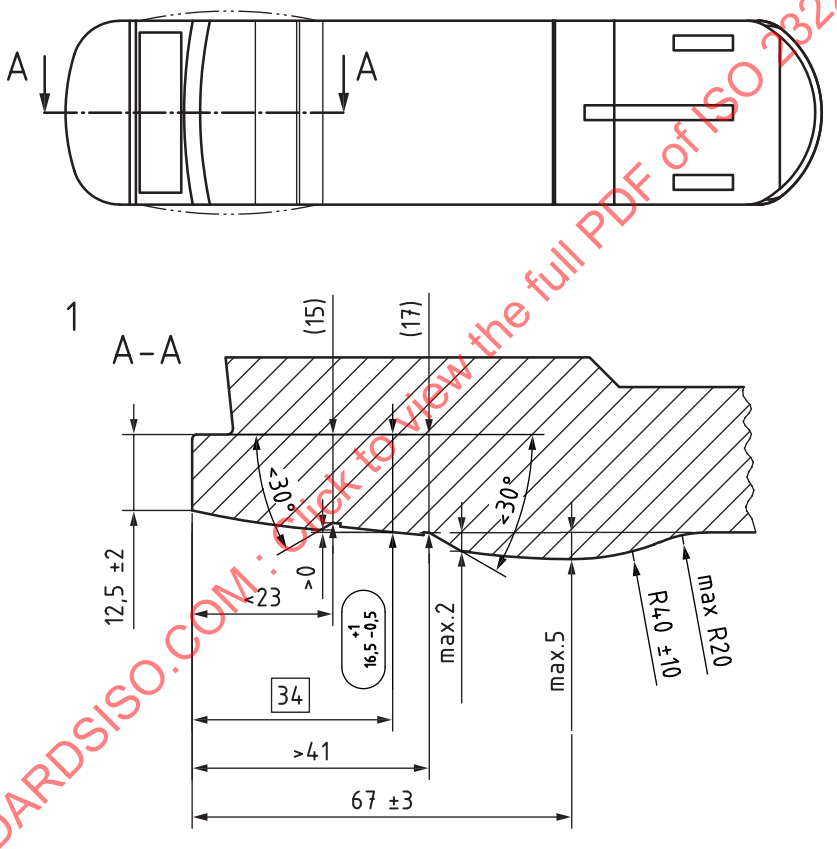
NOTE Shaded areas, including areas designated by footnote c, are those in which the tolerances of evenness and the dimensions $16{,}5^{+1}_{-0{,}5}$ and 28 ± 1 are valid.

L_1	< 240	≥ 240
L_2	≥ 80	≥ 90

Figure 3 — Dimensions of boot toe and heel, Type C

Figure 4 provides all the key dimensions (nominal) to build new boots. The gauge (see Annex C) can be used to check whether a boot is in conformity with this document.

Dimensions in millimetres



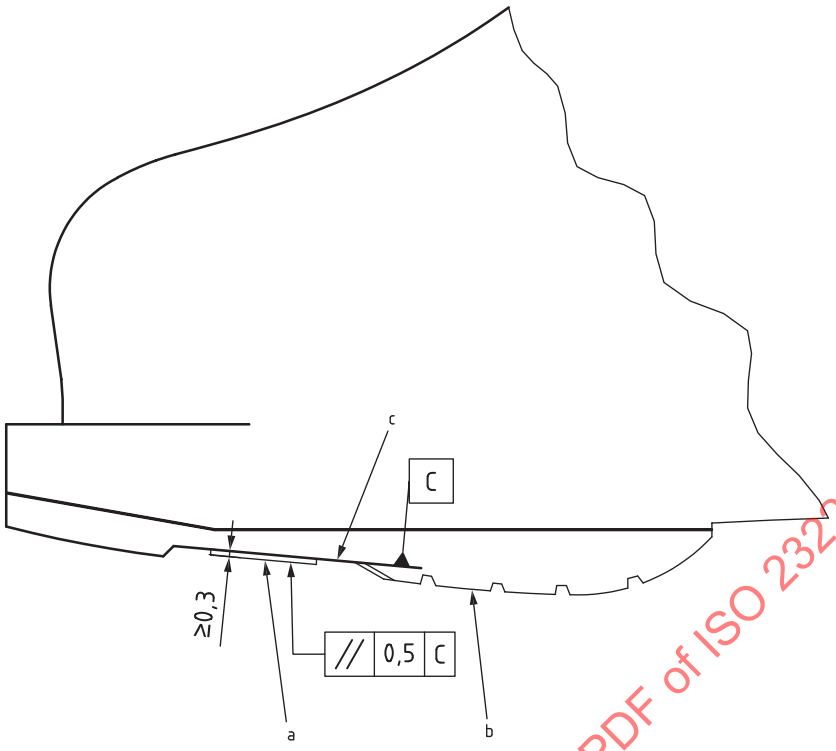
Key

1 position: in gauge

NOTE Some of these measurements are of 2nd degree, see Annex B.

Figure 4 — Detailed dimensions of boot, Type C

Dimensions in millimetres



a Low-friction zone with requirement for bearing surfaces in accordance with 4.3.5.

b Soft component.

c The soft component in the low-friction zone shall be at least 0,3 mm deeper than the low-friction zone.

Figure 5 — Toe interface and ski–walk area Type A and Type C

4.2.2 Evenness

4.2.2.1 Requirement

Measurements on each side of median plane shall not differ by more than 0,7 mm for Type A and 0,6 mm for Type C for the toe area and 1,2 mm for the heel area (Type A and Type C). The preload (F) shall be of 100 N for Type A and 50 N for Type C, at a distance (L) of 75 mm for Type A and 64 mm for Type C. Apply the preload for minimum 1 minute before the measurement is started.

4.2.2.2 Test method

The sample boot shall be placed as described in Figure 6. The X direction is along the boot length and is measured from boot tip or rear, for toe or heel area respectively. Y direction is measured from median plane along boot width. Height shall be measured with an indicator on each side of the median plane (positive and negative Y direction).

In the toe area the four measurements points are located at

— Type A: x = 32 mm and x = 42 mm with y = ±25 mm, see Figure 7, and

— Type C: x = 27 mm and x = 37 mm with y = ±22 mm.

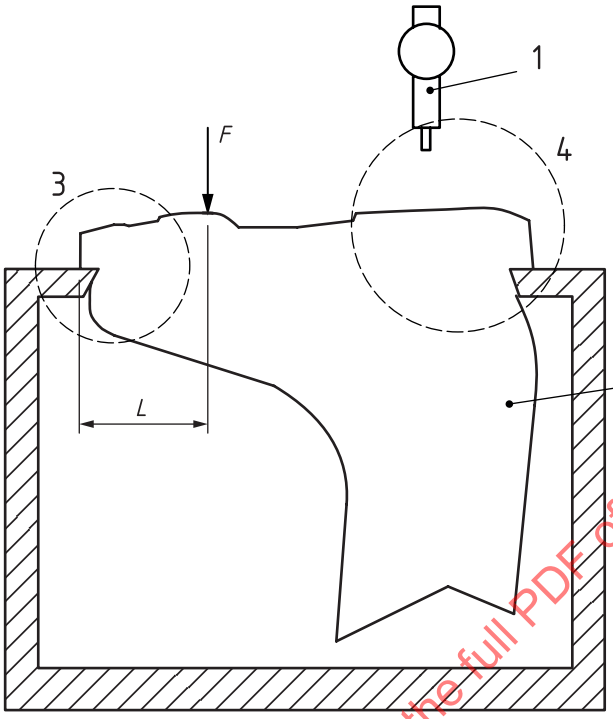
In the heel area four measurement points shall be selected within 25 mm and 60 mm from the heel, and within

— Type A: 20 mm to 30 mm from the median plane, and

— Type C: 18 mm to 28 mm from the median plane,

as shown in the hatched area in Figure 7 (for Type A). The points shall be symmetrical 2 by 2 with respect to the median plane. The points shall be in a zone which is at the interface of the sole (i.e. not in a notch).

Dimensions in millimetres



Key

1 indicator – evenness measurement apparatus
2 sample boot
3 toe area
4 heel area
F preload
L distance of preload point

Figure 6 — Evenness test set up

Dimensions in millimetres

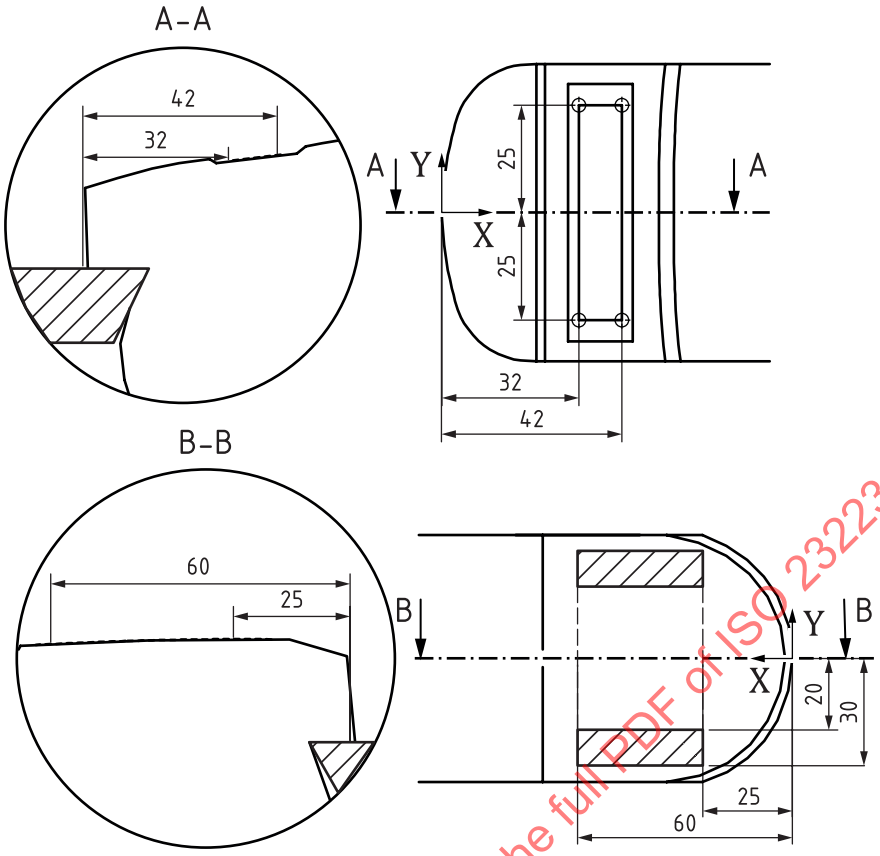


Figure 7 — Evenness test detailed zones for Type A

4.3 Design

4.3.1 Sole length

The sole lengths of the two ski-boots in a pair shall not differ by more than 2 mm.

4.3.2 Symmetry

The sole dimensions in the toe and heel interface areas shall be symmetrical about the median plane with an admissible deviation of 1 mm.

4.3.3 Side walls

4.3.3.1 Boot front interface

The side walls of the sole at the boot front interface, up to a distance of at least 25 mm from the front end, shall be perpendicular to the bearing surface with an admissible inward - outward deviation of 1 mm.

If the side walls of the sole are built in two parts, it shall be ensured that no part of the lower area of the sole protrudes beyond the upper profile.

Cut-outs in accordance with Figure 8 may be used.

Around the hole, material different from the shell material may be used if it does not protrude outside the shell surface.

Dimensions in millimetres

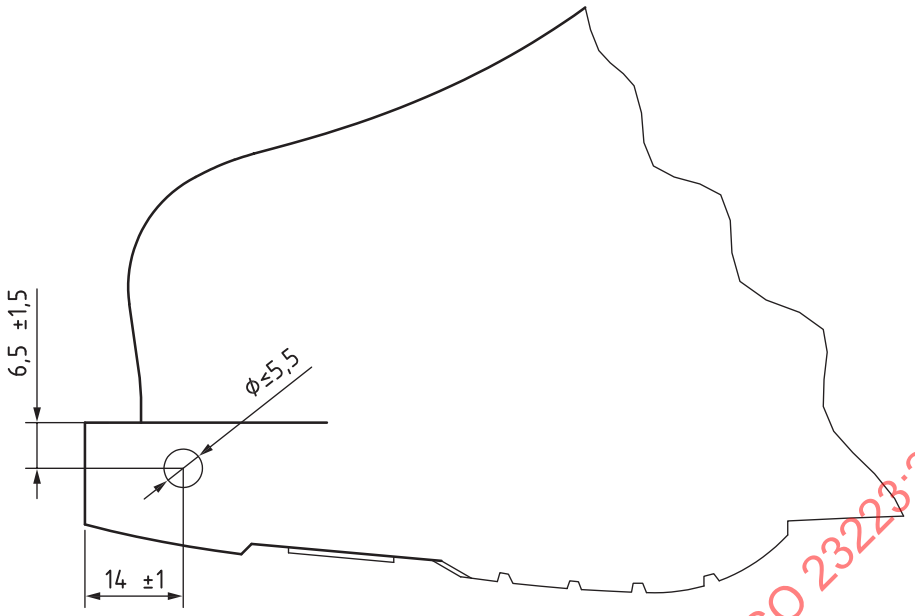


Figure 8 — Boot Type A with the position and dimensions of an example for cut outs allowed in the front interface

4.3.3.2 Boot rear interface

The lateral side walls of the sole at the boot rear interface, up to a distance of at least

— Type A: 70 mm, and

— Type C: 50 mm

from the rear end, shall be perpendicular to the bearing surface, or tapered inwards - outwards between 0° and 10° up to a height of 14 mm.

No part of the sole shall project beyond the 10° side wall limitation up to a height of 14 mm, between

— Type A: 70 mm and 85 mm, and

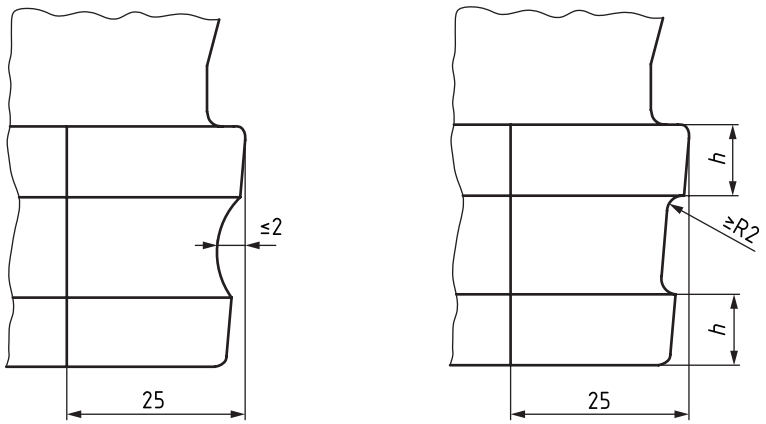
— Type C: 50 mm and 65 mm.

If the side walls of the sole are built in two parts, it shall be ensured that, from the heel end to a distance of 25 mm, no part of the lower area of the sole protrudes more than 0,5 mm beyond the upper profile.

If lateral grooves of more than 2 mm depth are present at the heel (see Figure 9) supports that at least comply with Figure 10 shall remain.

Other configurations of grooves are allowed if they are within dimensions given in Figure 9, Figure 10 and Figure 11. The test shall be done with the boot flat on table.

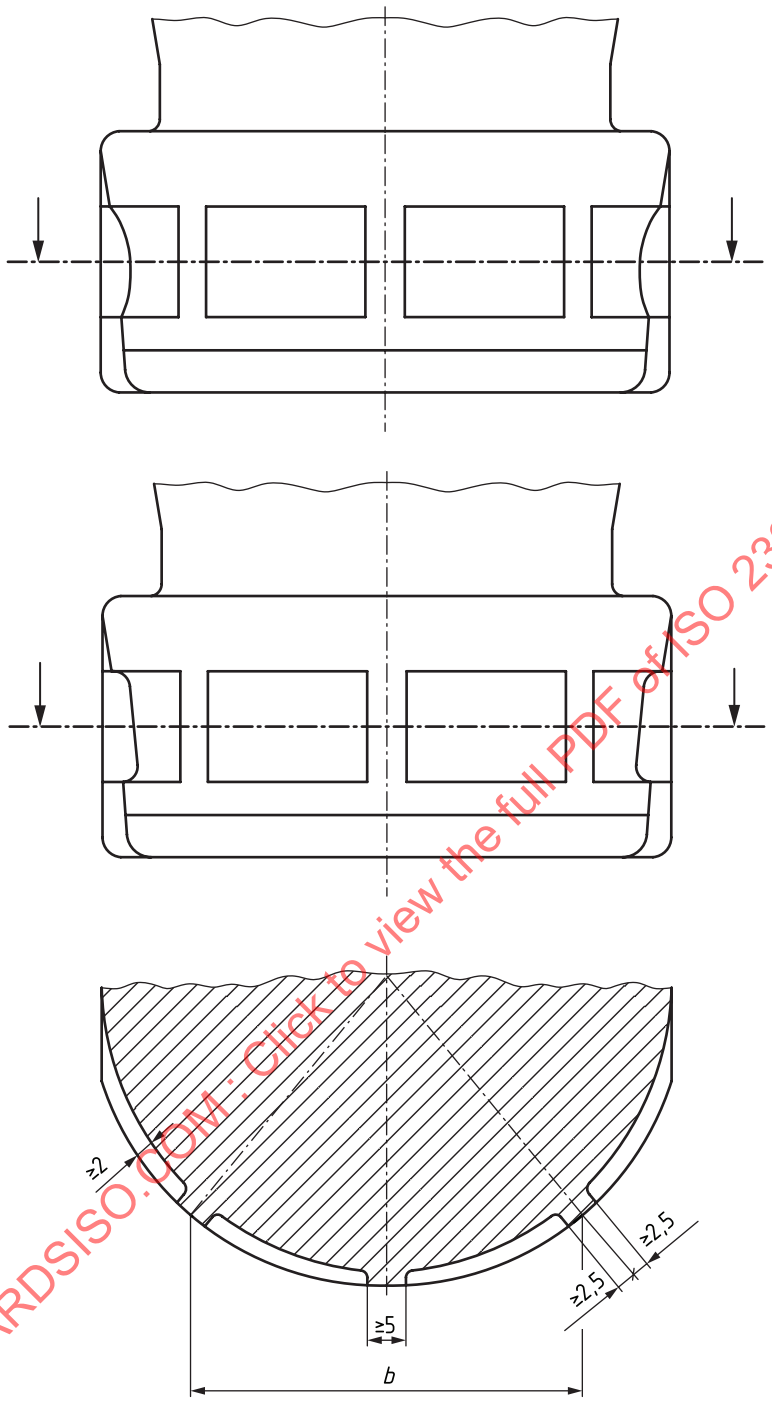
Dimensions in millimetres



Dimension	Type A	Type C
h	≥ 9	≥ 7

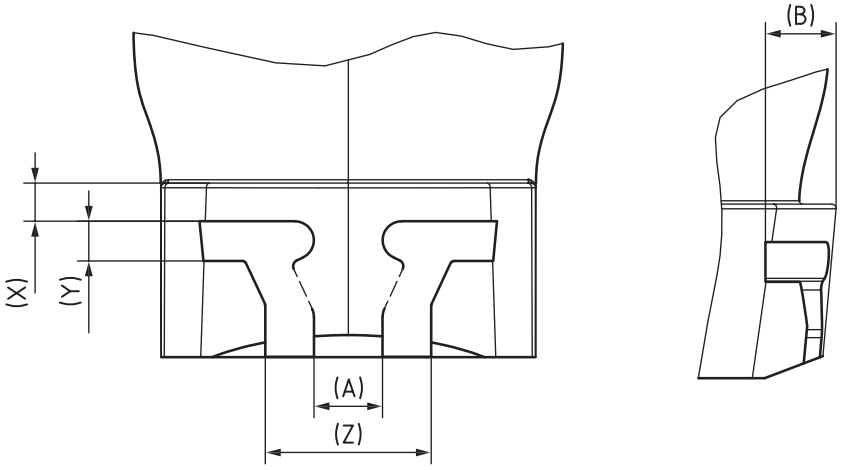
Figure 9 — Lateral grooves at rear

Dimensions in millimetres



Dimension	Type A	Type C
b	45 ± 1	40 ± 1

Figure 10 — Lateral supports at rear



Key

(A) $12{,}8\,^{0}_{-3}$ mm

(B) $13\,^{+2}_{0}$ mm

(X) ≥ 6,5 mm (reinforced by metal)

(Y) (7,0 ± 1) mm

(Z) $25{,}5\,^{+6}_{0}$ mm

Figure 11 — Boot Type A with the position and dimensions of an example for cut outs allowed in the rear interface

4.3.4 Free spaces

4.3.4.1 Boot toe

4.3.4.1.1 General

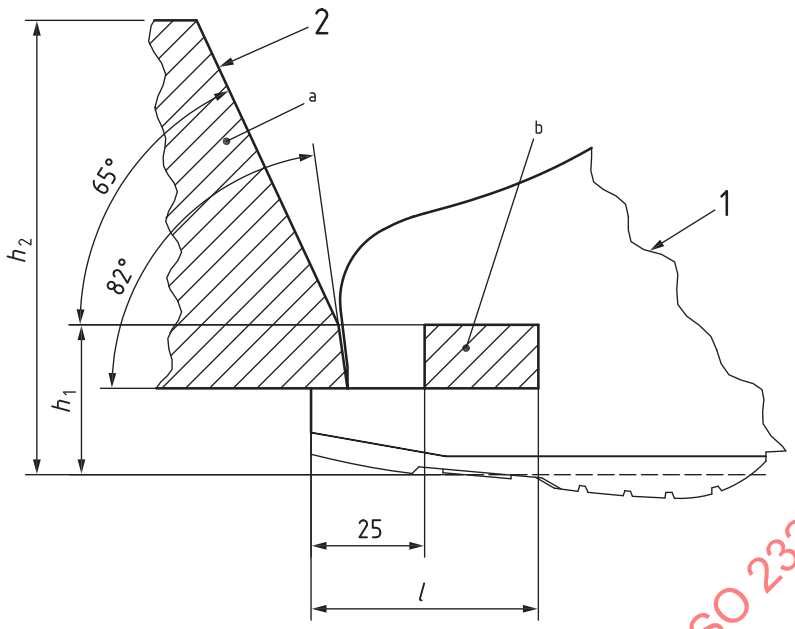
The boot shell in the front of the boot along the arcs with a radius of

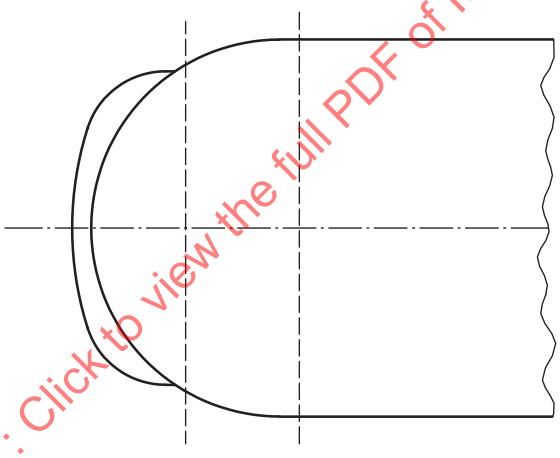
— Type A: (41,5 ± 3,5) mm, and

— Type C: (35 ± 3) mm

shall lie outside free space 1 (see Figure 12). The boot shall be positioned in the gauge.

Dimensions in millimetres





Dimension	Type A min.	Type C min.
h_1	33	29
h_2	100	80
l	50	44

Key

1 sample boot

2 cone

[a] Free space 1.

[b] Free space 2.

Figure 12 — Free spaces at boot toe

Within the free space 2 (see Figure 12), the arcs with radius of

— Type A: 41,5 mm ± 3,5 mm, and

— Type C: 35 mm ± 3 mm

(see Figure 1 and Figure 3, section A-A) shall be continued as an arc without discontinuity, providing a smooth transition to the sides of the shaft, between

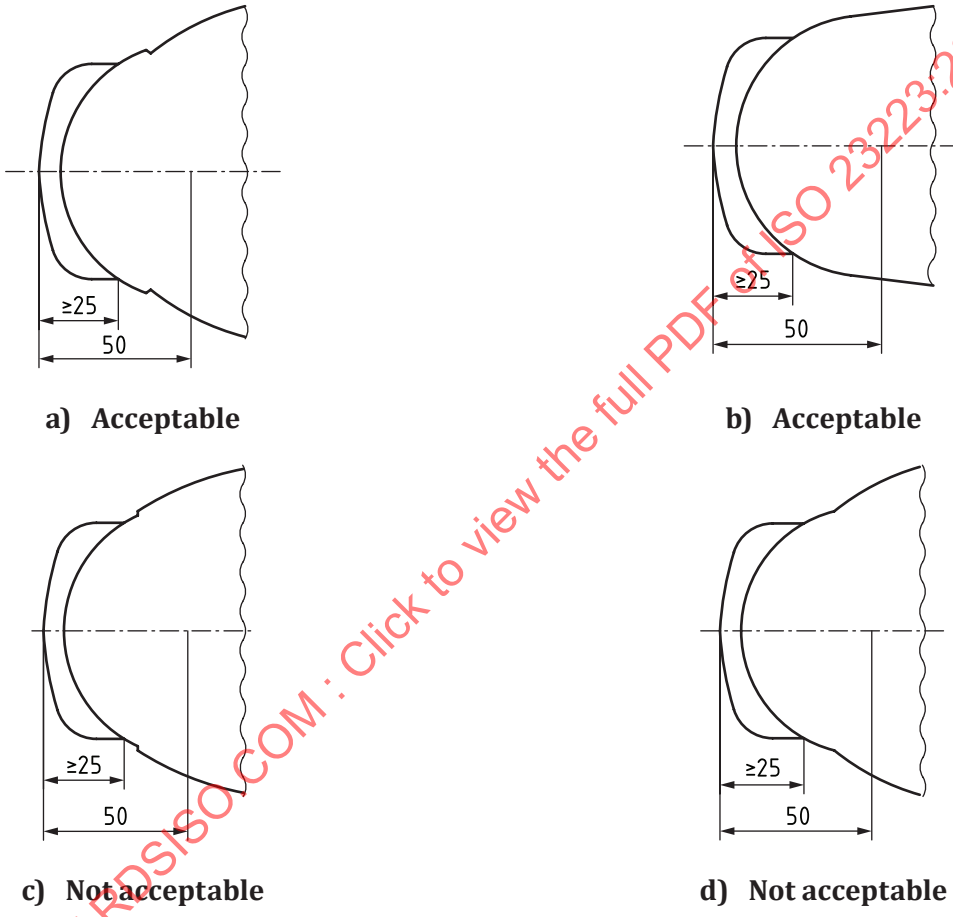
— Type A: 25 mm and 50 mm, and

— Type C: 25 mm and 44 mm.

This condition is fulfilled when the curvature of the shell within free space 2 remains convex (in accordance with Figure 13) in both horizontal and vertical planes. However, discontinuities are permitted, provided that they do not hinder the releasing movement of the binding.

Symmetry between both sides of the same boot is not required.

Dimensions in millimetres



a) Acceptable **b) Acceptable**

c) Not acceptable **d) Not acceptable**

Figure 13 — Curvature of the shaft in free space 2 (examples)

4.3.4.1.2 Test method

Place the boot in the test gauge in accordance with Annex C. Slide the test body (see Figure 14 and Figure 15) on the plane from the front over the front interface. Check whether the sole height exceeds the maximum value of

— Type A: 19,75 mm, and

— Type C: 17,5 mm

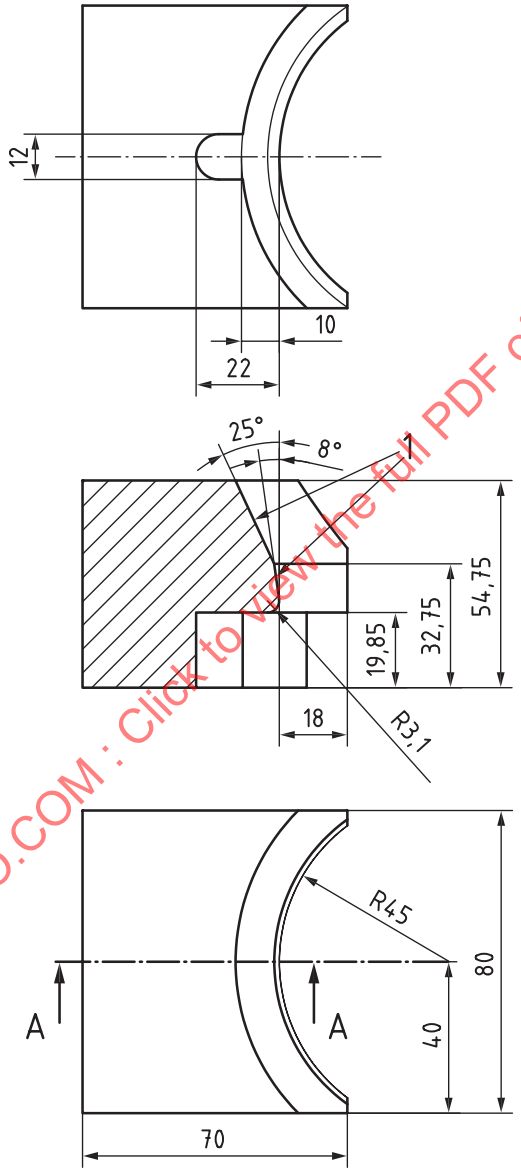
and whether the requirement for free space for the binding is met.

Place the boot sole into the test gauge, bring the upper edge of the boot sole Type A to a height of 19,75 mm by placing distance plates under the low-friction zone of the boot, then test if the free space requirements are met by applying the test body in accordance with Figure 14.

Place the boot sole into the test gauge, bring the upper edge of the boot sole Type C to a height of 17,5 mm by placing distance plates under the low-friction zone of the boot, then test if the free space requirements are met by applying the test body in accordance with Figure 15.

This test method is presented as an example; other setups enabling free spaces inspection may be used, as long as they respect the free space specifications from 4.3.4.1.

Dimensions in millimetres

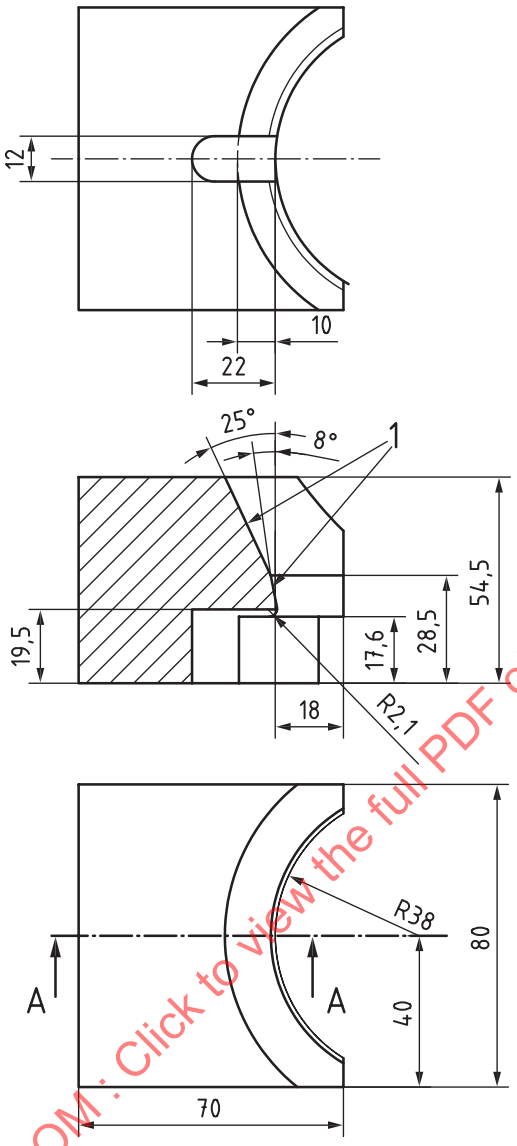


Key

1 concentric cones

Figure 14 — Test body for free space at boot toe, Type A

Dimensions in millimetres



Key

1 concentric cones

Figure 15 — Test body for free space at boot toe, Type C

4.3.4.2 Boot rear

4.3.4.2.1 General

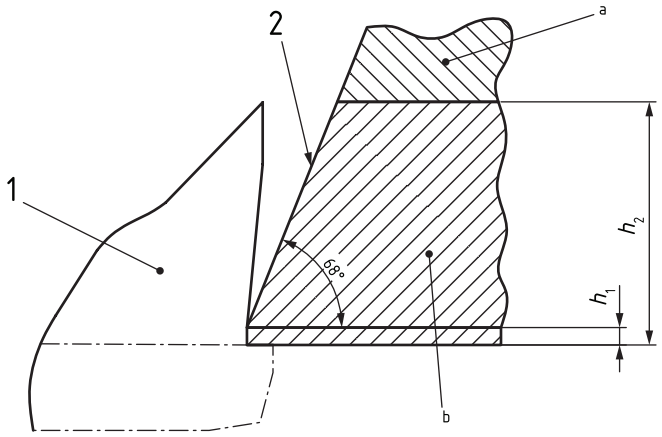
The boot shell at the rear of the boot along the arcs with radius of

— Type A: $\left(35^{+6}_{-2}\right)$ mm, and

— Type C: (27 ± 3) mm

shall lie outside free spaces 3 and 4 (see Figure 16) available for the ski-binding and for handling boot and binding.

Dimensions in millimetres



Dimension	Type	
	A	C
h_1	6 (min.)	5 (min.)
h_2	105	90
width, symmetrical to the median plane	50	45

Key

1 sample boot

2 cone

a Free space 3, for handling boot and binding.

b Free space 4, for ski-binding.

Figure 16 — Free space and rear interface for ski-binding at boot heel

4.3.4.2.2 Test method

Place the boot with its rear part

— Type A: ≥ 100 mm, or

— Type C: ≥ 80 mm

in the test gauge. Set the test body (see Figure 17 and Figure 18) on a supporting block. By using blocks that correspond to the set value and to the tolerance limits of the rear sole height

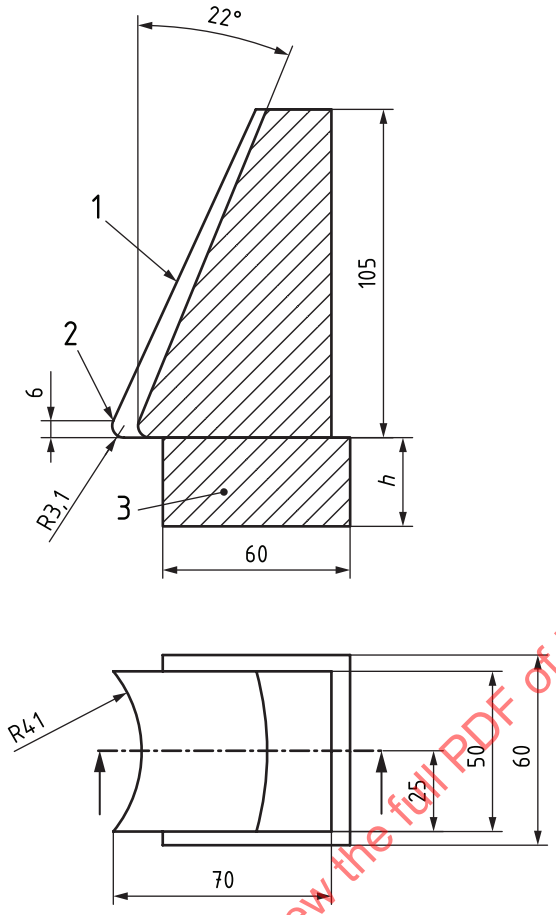
— Type A: $\left(30,5^{+2}_{-1}\right)$ mm, or

— Type C: (28 ± 1) mm

a check can be made as to whether this dimension is met.

This test method is presented as an example; other setups enabling free spaces inspection may be used, as long as they respect the free space specifications from 4.3.4.2.

Dimensions in millimetres

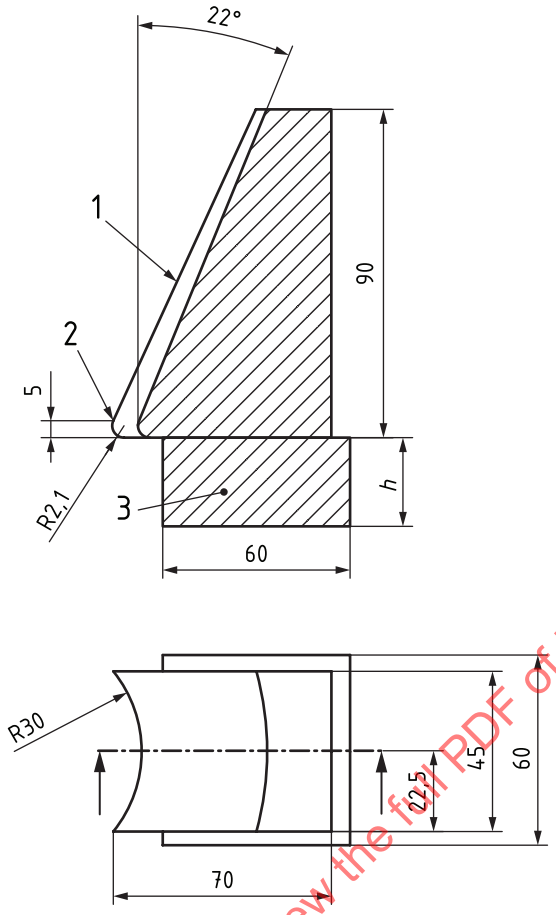


Key

1 cone (concentric with the cylinder)
2 cylinder
3 supporting blocks where:
h = 29,6 mm
h = 30,6 mm
h = 32,6 mm

Figure 17 — Test body for free space at rear of boot, Type A

Dimensions in millimetres



Key

1 cone (concentric with the cylinder)
2 cylinder
3 supporting blocks, where:
h = 27,1 mm
h = 28,1 mm
h = 29,1 mm

Figure 18 — Test body for free space at rear of boot, Type C

4.3.5 Bearing surfaces

4.3.5.1 Low friction zone dimension

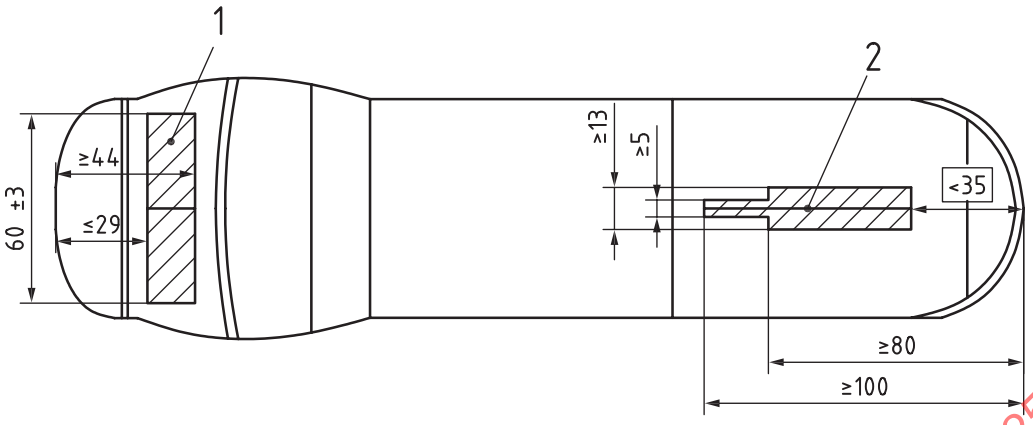
The boot sole interface areas shall conform to Figure 19.

There shall be no gaps > 1 mm in the toe interface area (see Figure 19).

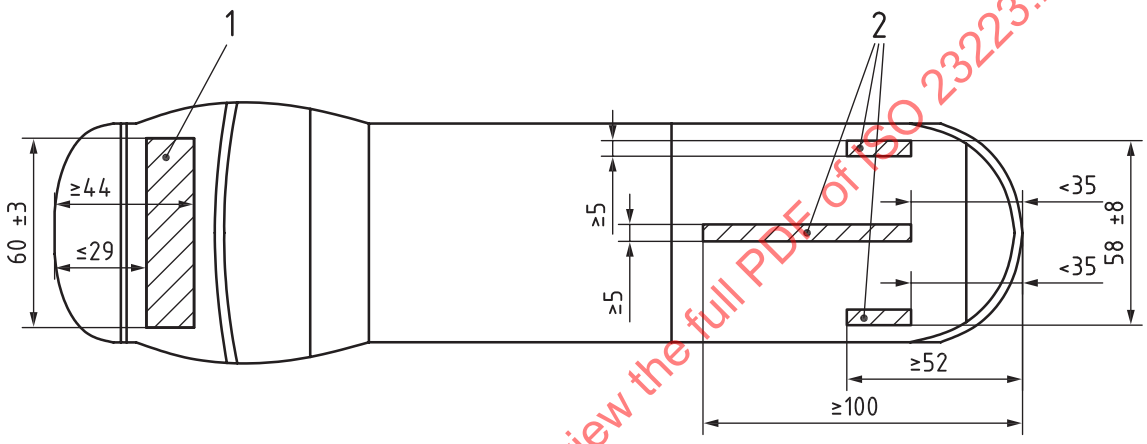
The recess of the soft component compared to the hard component of the heel interface area shall be < 0,5 mm.

No material that would interfere with side-to-side movement of the boot shall protrude below the low-friction zone.

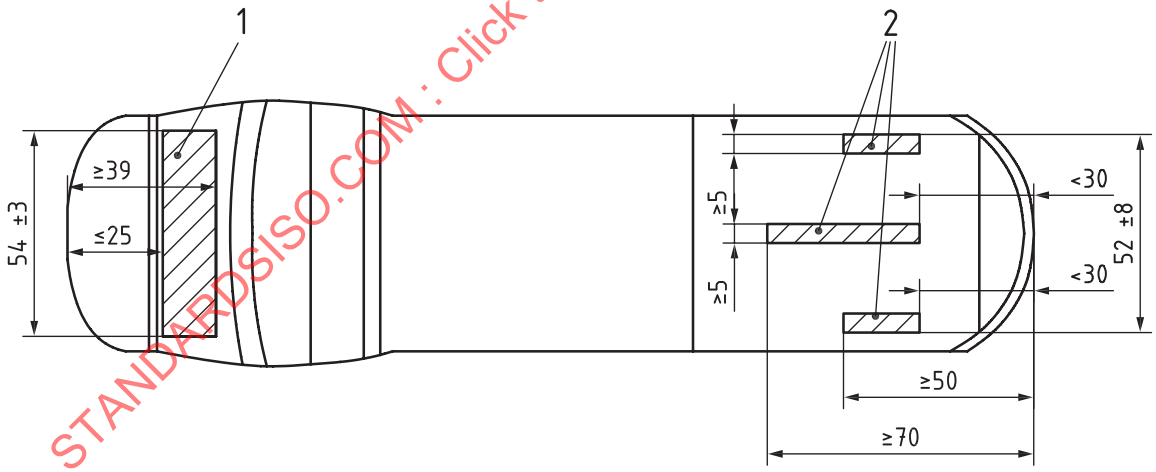
Dimensions in millimetres



a) Boot sole interface type A, option 1



b) Boot sole interface type A, option 2



c) Boot sole interface type C

Key

1 toe low-friction zone and bearing surface

2 heel low-friction zone

Figure 19 — Interface areas

4.3.5.2 Hardness

The soft component of the sole interface shall have a Shore A hardness of at least 65 and maximum 85. The hard components of the sole interface shall have a minimum Shore D hardness of 50 for both Type A and Type C. Testing of Shore A and D hardness shall be in accordance with ISO 868.

4.3.5.3 Low-friction zone

4.3.5.3.1 General

The coefficient of dynamic friction between the toe low-friction zone of the boot (see Figure 19) and a low friction element of polytetrafluoroethylene (PTFE) shall have a maximum value of 0,10 rounded off to two decimal places. Set up the test in accordance with Figure 20.

The coefficient of dynamic friction between the heel low-friction zone of the boot (see Figure 19) and a low-friction element of polytetrafluoroethylene (PTFE) shall have a maximum value of 0,15 rounded off to two decimal places. Set up the test in accordance with Figure 22.

4.3.5.3.2 Test method

4.3.5.3.2.1 General

The coefficient of dynamic friction is determined by the ratio of the force F_1, which is 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.

4.3.5.3.2.2 Test equipment and conditions

The following test equipment and conditions shall be used:

a) Six sample boots of at least three different sizes, stored for at least 14 days with the last 12 hours of storage before test under standard atmosphere.

b) Low-friction element, minimum 100 mm long, 15 mm wide, minimum 1 mm thick of peeled polytetrafluoroethylene (PTFE) with the following characteristics:

   1) density, tested in accordance with ISO 1183 (all parts), of 2,16 g/cm^3 ± 0,02 g/cm^3;

   2) strength, tested in accordance with ISO 527-1 and ISO 527-2 but with a specimen in accordance with Figure 20, of ≥ 24 N/mm^2;

   3) strain at break, tested in accordance with ISO 527-1 and ISO 527-2, of ≥ 250 %;

   4) mean ball-indentation hardness, tested in accordance with ISO 2039-1, of ≥ 26 N/mm^2 ± 4 N/mm^2;

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

c) Standard atmosphere: 23/50 or 20/65, in accordance with ISO 554.

d) Test load F_2:

   Type A = 500 N ± 5 N;

   Type C = 300 N ± 5 N.

e) Measuring distance: 8 mm.

f) Relative speed of the boot to the low-friction element 1 mm/s ± 0,2 mm/s.

4.3.5.3.2.3 Procedure

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

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

Carry out five measurements, the first of which is ignored, on each sample boot.

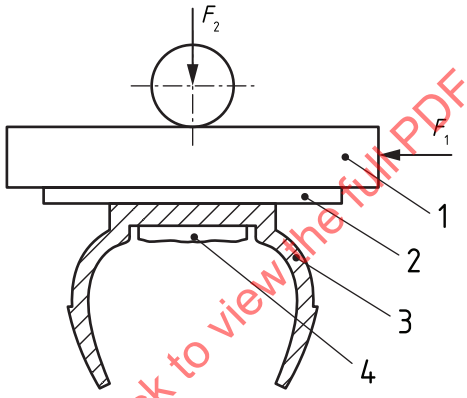
Deformation of the sole greater than 1 mm, which can be avoided by using an appropriate support (see Figure 20), is not permitted.

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 each).

Dimensions in millimetres



Key

1 low-friction element support
2 low-friction element
3 sample boot
4 support to prevent boot deformation
F_1 measuring force
F_2 test load

Figure 20 — Coefficient of dynamic friction test

4.3.5.4 Heel bearing surface

4.3.5.4.1 General

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

a) It shall be suitable for closing the heel part and it shall allow longitudinal travel of the binding.

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

c) There shall be no hindrance to sideways movement of the sole if the binding is released.

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

4.3.5.4.2 Penetration test

4.3.5.4.2.1 General

Bring a steel test cylinder, length 40 mm and diameter 20 mm, onto the heel bearing surface, set the zero with unloaded cylinder and apply load of

— Type A: 400 N, or

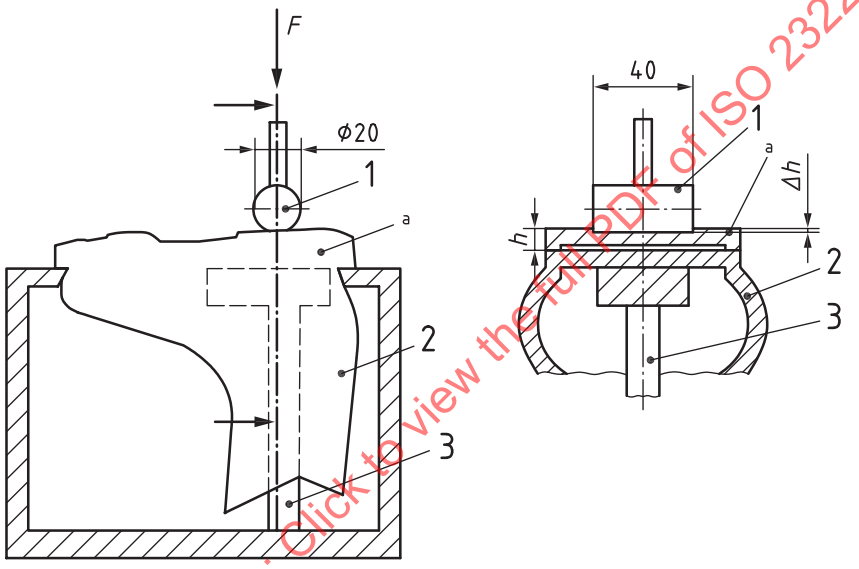
— Type C: 250 N perpendicular to the boot (see Figure 21).

After 60 s, the cylinder shall not have penetrated the surface more than 2,5 mm.

4.3.5.4.2.2 Test methods

The test shall be done in bearing area b (see Figure 1 and Figure 3).

Dimensions in millimetres



Key

1 test cylinder
2 sample boot
3 support to avoid sole bending
h thickness of the sole pad
Δh penetration depth
F test load
a Heel bearing surface.

Figure 21 — Penetration test

4.3.5.4.3 Cylinder tests

4.3.5.4.3.1 Correct fit requirement

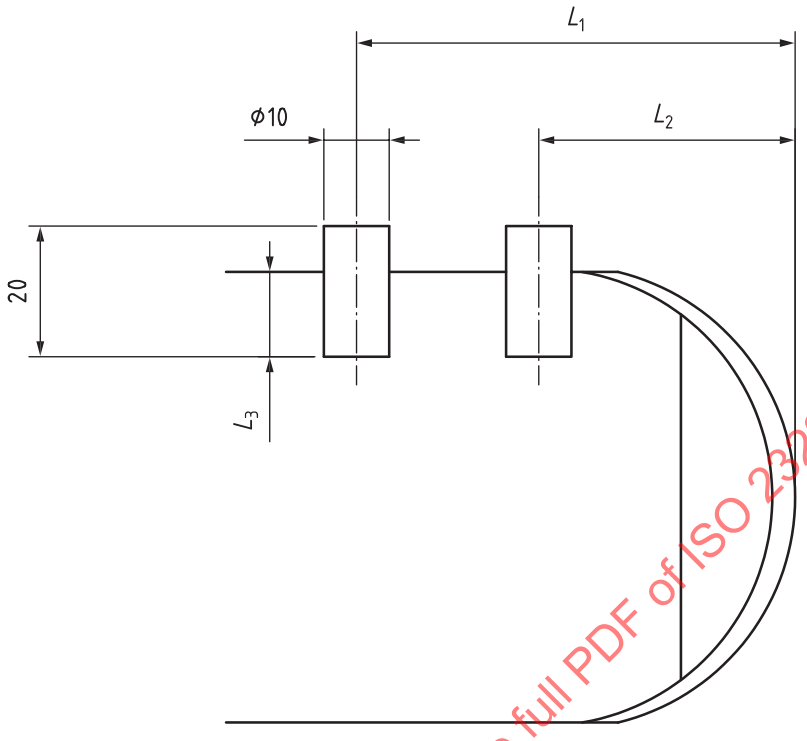
As described in Figure 22, move, parallel to the boot sole, a steel test cylinder of 10 mm diameter and 20 mm length within the peripheral zone of

— Type A: 13 mm, or

— Type C: 10 mm.

The test shall not reveal a variation in height greater than 1,5 mm in the longitudinal axis of the boot. There shall be no hindrance to sideways movement.

Dimensions in millimetres



Dimensions	Type	
	A	C
L_1	70	50
L_2	35	30
L_3	13	10

Figure 22 — Cylinder test for correct fit

4.3.5.4.3.2 Proper functioning requirement on ski brakes

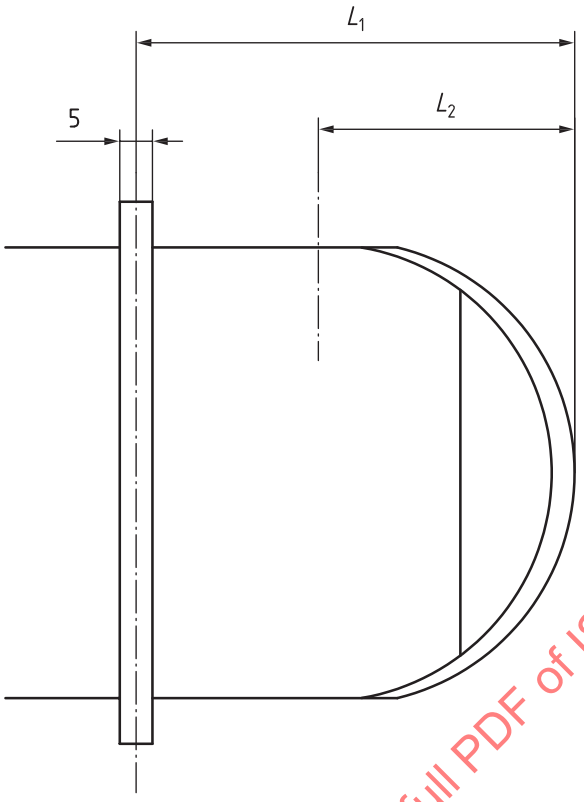
According to Figure 23, move, parallel to the boot sole, a steel test cylinder of 5 mm diameter and of length greater than the breadth of the sole along the longitudinal axis of the boot. Later, move a test cylinder of 5 mm diameter and a length of 35 mm in the area between

— Type A: 35 mm and the value of length L_1 and

— Type C: 30 mm and the value of length L_1,

from the heel end. Both tests shall not reveal a variation in height greater than 1,5 mm along this axis.

Dimensions in millimetres



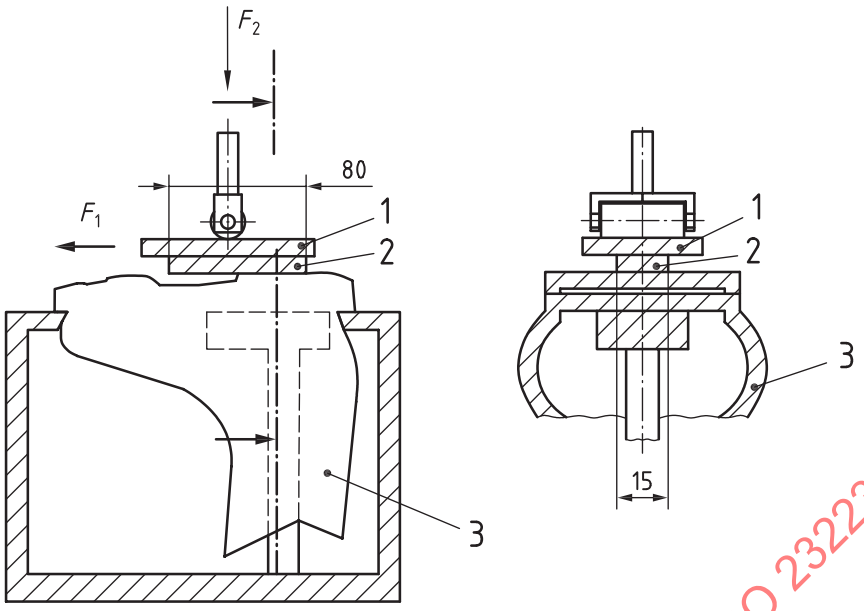
	Type			
	A		C	
Sole length	< 300	≥ 300	< 240	≥ 240
L_1	≥ 100	≥ 110	≥ 80	≥ 90
L_2	35	35	30	30

Figure 23 — Cylinder test for proper function ski brakes

4.3.5.4.4 Low-friction test of the heel interface area

The coefficient of dynamic friction between the low-friction zone of the heel interface area and a low-friction element of polytetrafluoroethylene (PTFE) shall be tested in accordance with Figure 24.

Dimensions in millimetres



Key

1 support of low-friction element

2 low-friction element [same characteristics as 4.3.5.3.2.2 b), except width and length which are respectively 15 mm and 80 mm]

3 sample boot

F_1 measuring force

F_2 test load

Figure 24 — Low-friction test

4.3.5.5 Toe bearing surface

4.3.5.5.1 General

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

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

b) There shall be no hindrance to sideways movement of the sole if the binding releases.

4.3.5.5.2 Penetration test

The penetration test shall be performed in accordance with 4.3.5.4.2 in the low friction zone (area a) in the toe area of Figure 1 and Figure 3.

4.3.5.6 Rigidity

4.3.5.6.1 General

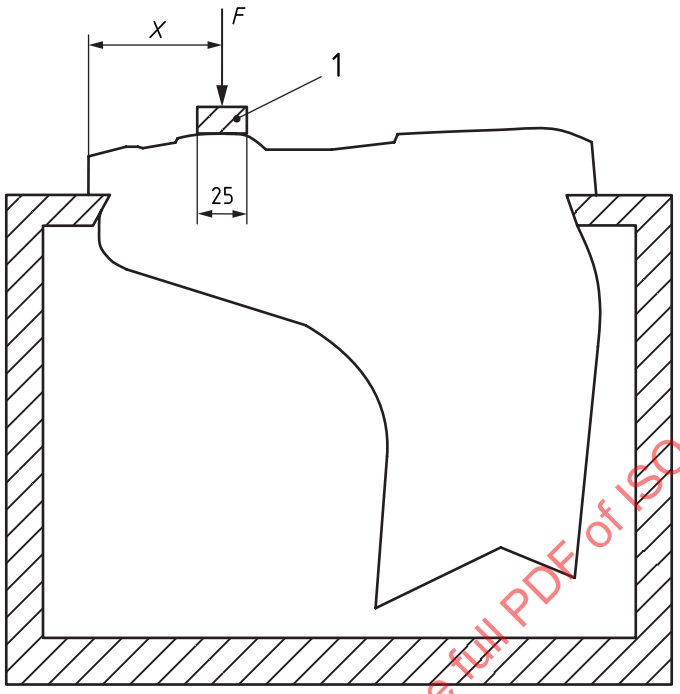
When measured in accordance with 4.3.5.6.2, the sole shall not deflex more than 5 mm.

NOTE This is to avoid any contact point outside the frontal zone and the boot sole interface area (see Figure 19) in order to ensure proper lateral release function.

4.3.5.6.2 Test method

The rigid test bar (width 25 mm) shall cover the whole width of the sole and a preload shall be applied in accordance with Figure 25.

Dimensions in millimetres



	Test load, *F*	Position, *X*
Type A	400 N	77,5 mm
Type C	200 N	67 mm

Key

1 rigid metal test bar

F preload

X position

Figure 25 — Rigidity test

4.3.6 Interfaces

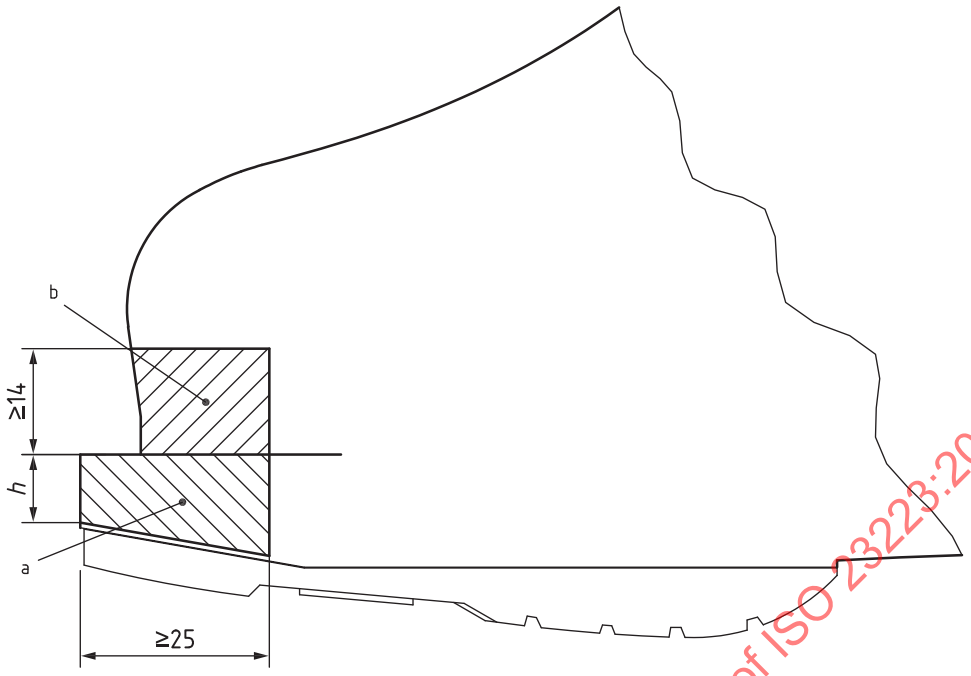
4.3.6.1 Front interface

At the front interface (see Figure 26)

a) no material in the sole shall protrude perpendicular to the vertical surfaces, and

b) the profile of the shell in the 82° to 90° space can be straight or convex in any vertical plane, providing the profile stays within the 82° to 90° limit.

Dimensions in millimetres



Dimension	Type	
	A	C
h	≥ 9	≥ 7

a Front interface sole.

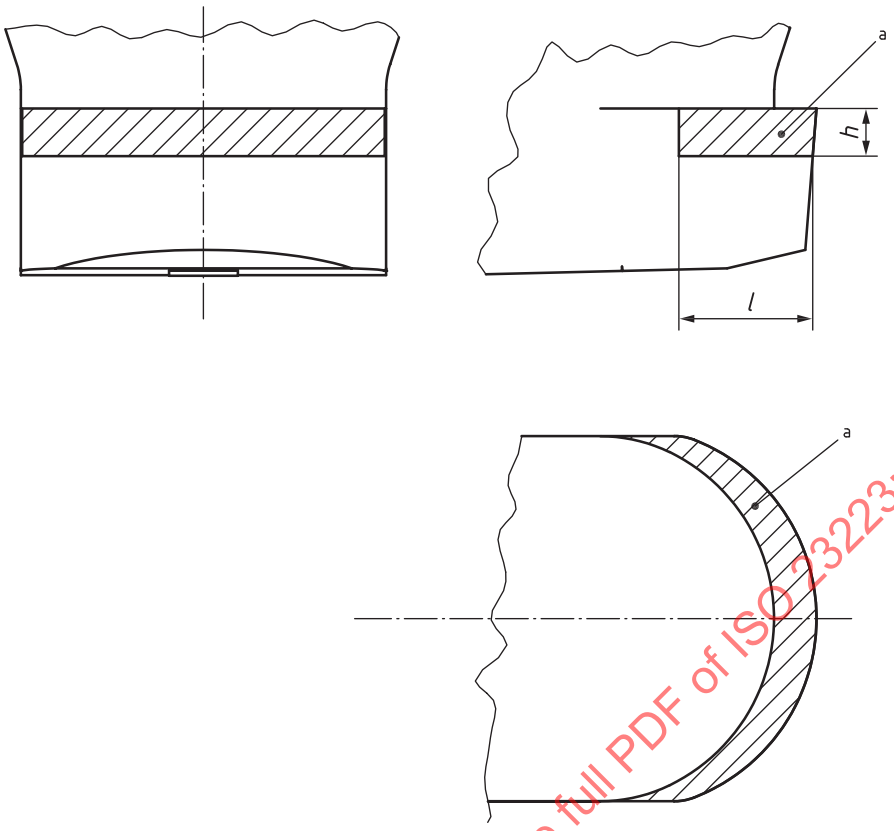
b Front interface shell.

Figure 26 — Front interface

4.3.6.2 Rear interface

The rear interface is defined in Figure 27.

Dimensions in millimetres



Dimensions	Type A		Type C
	without metal reinforcement	with metal reinforcement, according to Figure 11	
l	≥ 26	≥ 26	≥ 25
h	≥ 9	≥ 6,5	≥ 7

[a] Rear interface.

Figure 27 — Rear interface area

4.3.6.3 Hardness

The hardness of the material at the front and rear interface areas for adult boots Type A (see Figure 26 and Figure 27) shall not be less than Shore D hardness 50, measured at a temperature of (23 ± 2) °C.

The hardness of the binding interface (see Figure 26 and Figure 27) for children's boots Type C shall not be less than Shore D hardness 45.

Testing of Shore D hardness shall be in accordance with ISO 868.

4.3.6.4 Antifriction

4.3.6.4.1 General

The coefficient of dynamic friction at the front (see Figure 26) and rear interfaces (see Figure 27) between the boot material and a low-friction element of polytetrafluoroethylene (PTFE) shall be ≤ 0,1.

If the material is identical to the material of the low-friction zone, no testing is necessary.

If the materials are different, test in accordance with 4.3.6.4.2.

4.3.6.4.2 Test method

Inject a test specimen in the form of a plate (dimensions greater than or equal to low-friction zone) of the diverging material.

Test the coefficient of friction in accordance with 4.3.5.3.2.3.

4.3.6.5 Locking mechanism of the adjustment device

4.3.6.5.1 Toe

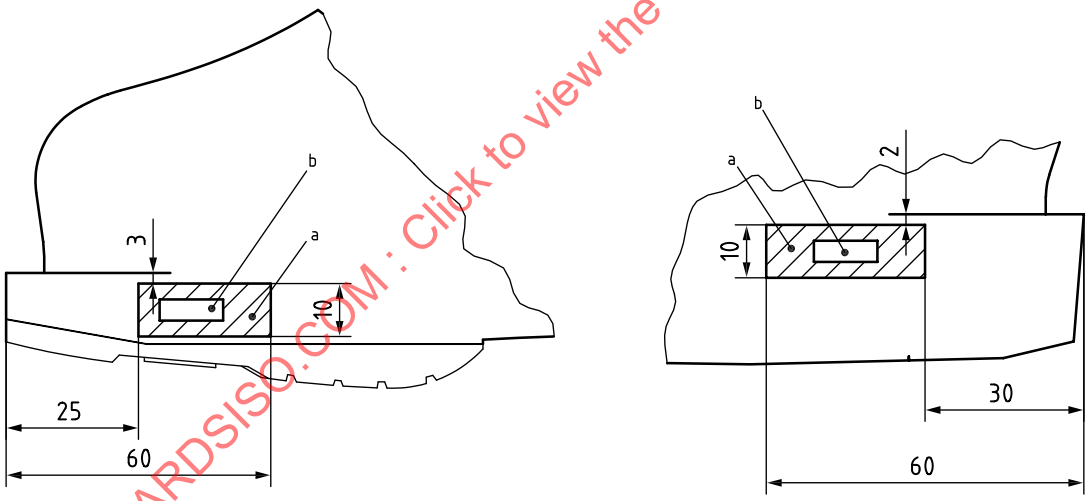
On both sides of the boot soles, a contact area of 12 mm x 4 mm for the adjustment device pushing rod shall be available inside the boundaries defined in Figure 28. The contact area shall be parallel to the median plane and shall lie at the same height on both sides of the front part of the sole.

4.3.6.5.2 Heel

On both sides of the boot soles, a contact area of 12 mm x 4 mm for the adjustment device pushing rod shall be available inside the boundaries defined in Figure 28. The contact area shall be parallel to the median plane and shall lie at the same height on both sides of the rear part of the sole.

The shaded areas in Figure 28 shall correspond with the outer shell of the ski boot but shall not contain any edges nor contain any protruding areas.

Dimensions in millimetres



a) Type A