FEDERATION INTERNATIONALE DE SKI
INTERNATIONAL SKI FEDERATION
INTERNATIONALER SKI VERBAND

SPECIFICATIONS FOR COMPETITION EQUIPMENT

2000/2001

Specifications for Competition Ski Equipment Alpine / Nordic

A. Definition

1. Competition equipment

The term „competition equipment“ embraces all items of equipment used by the athletes in competition skiing, including clothing and implements that serve a technical function. The entire competition equipment forms a functional unit. In this connection the following points must be observed:

a) the principal of safety
b) the principal of fairness

1.1 Competition implements

Competition implements refer to those parts of the equipment which fulfil essential functions for the competition and which are separable from the competition.
Examples: skis, bindings, boots, poles, clothing, helmets, ski goggles.

1.2 Additional equipment (accessories)

Additional equipment (accessories) to competition equipment are those components or implements which have an influence on the technical function of the competition equipment and which are attached directly to the equipment by means of recognised fastenings. Accessories do not perform essential functions for the competitions.
Example: parablacks, plastic tip covers, additional weights, back protectors.

1.3 Auxiliary equipment

Auxiliary equipment refers to those components of the competition equipment which do not fulfil an essential function, and which do not fall under the heading of additional equipment
Example: measuring instruments.

B. Alpine Competition Equipment

Downhill, Slalom, Giant Slalom, Super G

1. Alpine racing ski

1.1 Definition

Skis, predominantly for Downhill, Slalom, Giant Slalom and Super G racing through gravitational force on suitable terrain. To guarantee the skier optimum use of the sides of the skis for steering, the edges of the running surface are made mainly of hard sealed materials.

1.2 Restrictions

1.2.1 Geometric features

1.2.1.1 Ski length

Minimum length (unwound length) for all disciplines:

Ladies:	150 cm (Season 2000/2001 = 155 cm)
Men:	155 cm

The ski length has to be marked on the ski.

1.2.1.2 Profile width

Minimum width of the running surface at binding without any tolerance: 60 mm.

1.2.1.3 Radius

Downhill Ladies:	minimum 40 m (Season 2000/2001 = 37 m)
Downhill Men:	minimum 40 m
Super G (Ladies and Men):	minimum 33 m
Giant Slalom Ladies:	minimum 21 (Recommendation FIS season 2000/01 = 23 m)
Giant Slalom Men:	minimum 21 m

Marking on skis compulsory.

1.2.1.4 Overall height of sectional view

No limitations.

1.2.1.5 Camber

No limitations.

1.2.1.6 Contour, length and height of shovel

Slalom and Giant Slalom:	minimum height per ski: 50 mm.
Downhill and Super G:	minimum height per ski: 30 mm.

1.2.1.7 Contour of tail

Maximum height: 10 mm.

1.2.1.8 Running surface

No limitations

1.2.1.9 Running Groove

No limitations

1.2.2 Flexibility

No limitations with regard to the rigidity in all grades of flex.

1.2.3 Mass

No limitation with regard to weight and distribution of mass.

1.2.4 Construction

1.2.4.1 Type

No limitation with regard to composite structure.

1.2.4.2 Ski components

Running surface: no limitations with regard to material and dimensions.
Torsion box: no limitations with regard to material and dimensions.
Edges: no limitations with regard to material and dimensions.
Top surface: no limitations with regard to material and dimensions.
Core: no limitations with regard to material and dimensions.

1.2.5 Durability

With regard to the mounting of bindings, national norms and at least the „Ö-Norm 4030“, that is the equivalent of DIN- and ISO-norms, must be fulfilled.

1.2.6 Additional equipment

1.2.6.1 No additional equipment is permitted which

a) makes use of foreign energy (e.g. heaters, chemical energy accumulators, electric batteries, mechanical aids, etc.)
b) causes or intends to cause changes in the outer conditions of the competition to the disadvantage of fellow competitors (e.g. changes to piste or snow)
c) increase the risk for the users or other persons, when used for the purpose it was intended for.

2. Safety bindings

Safety bindings function as strain limiters. That is, these devices transfer specific demands occurring during skiing to an acceptable limit, and when this limit is overstepped, they release their firm hold to the ski.

2.1 Anti-vibration plates

Mounting of such plates is permitted under the following conditions:

2.1.1 Width of ski surface

The plates may not exceed the width of the ski surface.

2.1.2 Maximum height

The maximum height (distance between the bottom of the running surface of the ski and the ski boot sole) is 55 mm (Ladies and Men).

2.2 Ski stoppers

The ski stopper is a catching apparatus for skis, whose function is to stop or bring to a standstill the loose ski following the release of the safety binding within the intermediate area of the skiers fall.

In competitions and official training skis without ski stoppers are not permitted. The release may not be injured by the way of mounting. The manufacturer is responsible for a perfect function of the ski stoppers.

3. Ski boots

3.1 Ski boots are robust footwear developed especially for skiing, offering protection against jolts and bumps as well as injury from ski edges and other external causes. The ski boot encloses the foot firmly, while at the same time allowing the movement necessary for skiing techniques, in that the ankle has the room it needs to move, but at the same time allowing the transfer of every steering movement completely to the ski.
The relevant national and international guidelines and norms establish the requirements.

3.2 Thickness of ski boot soles

Distance between the ski boot sole and the base of the heel including all hard and soft parts:
Ladies: 45 mm
Men: 50 mm

4. Ski poles

The ski pole is a sports article whose function should aid the skier, facilitate balance and, if necessary, enable stopping. The national and international guidelines and norms establish the minimum requirements for ski pole tips, grips, shaft, baskets, straps, length, etc. Due to risk of injury, metal baskets are not permitted.

5. Racing suits

Competition suits and any clothing worn beneath, such as underwear, etc., may not be plasticised or treated by any chemical means (gaseous, liquid or solid). Seams may only exist in order to join the portions of the suit. Outer tucks and darts are not allowed. The suits must be equally porous in all parts, both from the outside in and from the inside out. Minimum air permeability is established as follows:
The unstretched fabric must show a medium air permeability of a minimum of 30 litres per m2/sec under 10 mm of water pressure.

5.1 Additional requirements for Slalom, Giant Slalom and Super G suits

For Giant Slalom and Super G suits' shoulder and arm sections, as well as knees and shins may be specially protected. For Slalom suits shoulder and arm sections as well as legs may be specially protected. No minimum air permeability is prescribed for this protection or padding.

5.2 Examination of materials, suits

The guidelines for minimum air permeability established by the Control Procedures/Equipment Working Groups in collaboration with the Federal Institute for Materials Control are valid. Multi-layered materials are accordingly

permitted for alpine racing suits, as long as they conform to the air permeability requirements in question.

6. Crash helmets

Only helmets are permitted whose shell and padding cover the head and ears. The National Ski Associations are advised to provide their teams only with crash helmets which satisfy the minimum requirements and which have been certified by recognised institutes.
Helmets with spoilers or edges that stick out are not permitted.
Certain helmets must show a smooth top surface for safety reasons.

7. Ski goggles

Ski goggles are devices protecting the eyes against weather and rays with optically correct lenses. Their aim is to guarantee good, contrast-free visibility in all weather conditions. The use of ski goggles is recommended. Reshaping the ski goggles in order to attain more aerodynamic features is not allowed.

8. Ski gloves

Gloves offer protective covering against weather and external forces. The wearing of gloves is urgently recommended. Reshaping the glove, the application of a plastic coating on the outer surface, or the use of skai (imitation leather) with the aim of attaining more aerodynamic features, are not allowed. The glove must not reach beyond the elbow. Protective padding along the entire length of the glove is permitted. The use of protective guards in the form of shields, which are pulled over the glove, is permitted.

9. Back protectors

9.1 Definition

The back protector is an additional item of equipment, which protects the athlete's back against weather and external forces.

9.2 Specifications

The back protector must adapt to the anatomical bend of the athlete's spine and lay flat against the body. The top edge of the back protector has to be situated in the area of the spinal column and may not got above the 7th cervical vertebrae (C7). Fastening of the back protector may only take place with a stomach belt. The maximum thickness has to be in the middle part and may not exceed 45 mm; the thickness reduces at the edges of the back protector. All designs to improve aerodynamic properties are forbidden. The back protector may be worn exclusively under the competition suit.

C. Nordic Competition Equipment

Cross-Country Skiing

1. Cross-Country racing skis

1.1 Definition

The cross-country racing ski is a type of ski, whose features guarantee the best possible application of the gliding techniques to master cross-country pistes (uphills, bumpy terrain, downhills). The basic features of this type of ski are defined in these rules.

1.2 Restrictions

1.2.1 Geometric features

1.2.1.1 Ski length

Minimum: height of skier minus 100 mm

1.2.1.2 Ski width

In the binding fixation area of the ski defined by ISO 9119 or Ö-Norm S4072 minimum 40 mm

1.2.1.3 Tip

The minimal shovel curvature is 30 mm.

1.2.1.4 Tail

The tail must not rise more than 30 mm on the unweighted ski when laying on a flat surface.

1.2.1.5 Overall height of sectional view

maximum 35 mm
minimum 20 mm

1.2.1.6 Same construction

Both skis must be constructed in the same way, and must be the same length.

1.2.2 Flexibility

No restrictions with regard to the rigidity in all grades of flex.

1.2.3 Mass

Skis must weigh at least 750 g per pair. No limitations with regard to the distribution of mass.

1.2.4 Construction

1.2.4.1 Type of construction

No limitations.

1.2.4.2 Ski components

1.2.4.2.1 Running surface

The entire width of the running surface can be smooth or slightly grooved length-wise. With the exception of the running groove, however, the level must be constant in the entire length and width. Climbing aids in the form of scale patterns or step patterns are permitted. Models driven by means of foreign energy of any kind are not permitted.

1.2.4.2.2 Top surface

No limitations

1.2.4.2.3 Edges

The edges must not face up and outwards, making the running surface narrower than the top surface (no wedge shape).

1.2.5 Durability

No limitations

1.2.6 Additional equipment

1.2.6.1 No additional equipment is permitted which

a) makes use of foreign energy (e.g. heaters, chemical energy accumulators, electric batteries, mechanical aids, etc.)
b) causes or intends to cause changes in the outer conditions of the competition to the disadvantage of fellow competitors (e.g. changes to piste or snow)
c) increases the risk of injury to users or other persons, when used for the purpose it was intended for.

2. Cross-Country racing bindings

No limitations with regard to material and make, subject to decisions 1.2.6 b) and c).

3. Cross-Country racing boots

No limitations with regard to material and make.

4. Cross-Country racing poles

4.1 Definition

The cross-country racing pole is a pole, whose features guarantee the best possible application of the gliding techniques to master cross-country pistes (uphills, bumpy terrain, downhills).

4.2 General rules

4.2.1 Poles of equal length

Two poles of equal length must be used in competition, with one pole held in each hand.

4.2.2 Pole length

The maximum pole length must not exceed the competitor's height, nor measure below the hips (measurements are taken by placing the tip of the pole on the ski in front of the binding).

4.2.3 Constant length

The pole must have a constant length. It may not, for example, possess a telescopic system.

4.2.4 Foreign energy

The pole must not create a foreign energy to favour push-off (e.g. springs or mechanical devices).

4.2.5 Weight

No limitations regarding the weight of the pole.

4.2.6 Construction

The poles may be constructed asymmetrically (e.g. there may be a difference between left- and right-hand poles).

4.3 Technical Specifications

4.3.1 Grip

The grip must be attached to the shaft. There are no limitations with regard to geometric features or material.

4.3.2 Straps

The straps must be joined to the grip or the shaft. They may be adjustable in length and width.

4.3.3 Shaft

There are no limitations with regard to material and make of the shaft or distribution of mass.

4.3.4 Baskets

Baskets with varying geometric features and materials are permitted to master various snow conditions. The baskets, however, must not change the condition of the track, so that other competitors suffer disadvantages.

4.3.5 Tip

Tips may be joined to the shaft at any angle. It is permitted to use one or more tips per pole. There are no limitations with regard to material.

D. Nordic Competition Equipment

Ski Jumping

1. Jumping skis

1.1 Definition

Jumping Skis are manufactured especially for use on ski jumping hills. Their construction is adapted to the requirements of ski jumping.

1.2 Restrictions

1.2.1 Geometric features

1.2.1.1 Ski length

Maximum: 146 % of the total body height of the competitor.

1.2.1.2 Profile width: see appendix 2

The curvature from A through B to C indicates the shape of the ski sidecut. This curvature must be equal on both sides and symmetrical to the ski centre line. As a maximum the line connection from A to B, as well as B to C should appear as a straight line.
Minimum width of the running surface at the point of balance 95 mm, maximum width 105 mm.
The edges must form a 90° angle to the running surface and the top surface along the entire length of the ski.
Rounded top-to-bottom edges must never be more than 2 mm.
The difference between the above-mentioned measurement of the width of the ski tip and the ski tail may not exceed 5 mm.

1.2.1.3 Overall height of the sectional view

No limitations

1.2.1.4 Camber

No limitations

1.2.1.5 Contour, length and height of shovel

The ski tip may be individually modified as long as it remains symmetric and centred to the middle part and that the minimum distance to the ground of 30 mm is observed.

1.2.1.6 Contour of tail

Maximum height 10 mm

1.2.1.7 Running surface

No limitations

1.2.1.8 Running groove

No limitations

1.2.2 Shape and Flexibility

Aerodynamic coverings on the tips, as well as fins in the form of stabilizers on all sides are not allowed. A design, which makes a desired aerodynamic flex possible during flight, is not allowed. Otherwise there are no limitations with regard to rigidity in all grades of flex.

1.2.3 Mass

A single non-mounted ski must have a minimum weight conforming to its length (the weight in dkg results of the ski length in cm: e.g.
250 cm = 2,50 Kg, 262 cm = 2,62 Kg). Lead-weights used for balancing the centre of gravity are not considered (see 1.2.6.2).

1.2.4 Construction

1.2.4.1 Type of construction

No limitations with regard to composite structure.

1.2.4.2 Ski components

Running surface: No limitations with regard to material.
Torsion box: No limitations with regard to material and dimensions.
Edges: see 1.2.1.2.
Top surface: Must be smoothly varnished.
Core: No limitations with regard to material and dimensions.

1.2.5 Durability

The jumping ski must have screw retention strength of 1600 N in the area of the binding mounting.

1.2.6 Additional equipment

1.2.6.1 No additional equipment is permitted which

a) makes use of foreign energy (e.g. heaters, chemical energy accumulators, electric batteries, mechanical aids, etc.).

b) causes or intends to cause changes in the outer conditions of the competition to the disadvantage of fellow competitors (e.g. changes to piste or snow).
c) increases the risk of injury to users or other persons, when used for the purpose it was intended for.

1.2.6.2 Additional weights

Additional weights for balancing the centre of gravity ar permitted.

2. Jumping ski bindings

No limitations with regard to material.
Additional devices creating foreign energy of any kind as an aid to take-off are forbidden.
The complete binding system must be mounted symmetrically, parallel and centrally to the running direction. The outline of the heel wedge of the shoe sole in its normal production form may not protrude over the sidewalls of the Jumping ski.

2.1 Binding clamps

Clamps for the jumping ski binding (model 1997/80) with and without spring-back devices are permitted.

2.2 Binding wedges

Binding wedges are permitted to improve the in-run position. The entire height of the heel wedge and binding wedge must not exceed 70 mm.

2.3 *Mounting of the bindings*

The bindings must be mounted parallel to the run-direction. The binding must be mounted in such a way that maximum 57% of the entire ski length is used as the front part. Measured from the ski tip (with shovel curvature) to the shoe cap (leather part). (The 57% will be rounded up or down to full centimetres).

3. Ski jumping boots

No limitations with regard to material. The shoe size must equal the foot size.

4. Ski jumping suits

All portions of the ski jumping suit must be made of the same material and must show the same air permeability from the outside in and from the inside out. The suit must close by means of a zipper at the front, which reaches to the collar. The width of this zipper may not exceed 10 mm. During the jump the zipper must be completely closed.
The suits must conform to the body shape in an upright position with the following tolerances:

A) The chest measurement of the jumping suit is limited to the athlete's actual body measurement plus a tolerance of 8 cm;
B) For the waist: actual body measurement plus 10 cm;
C) For the thigh: actual body measurement plus 8 cm;
D) For the torso: actual body measurement plus 10 cm;

E) For the shoulder /underarm: actual body measurement plus 8 cm;
F) For the arm: actual body measurement plus 8 cm;

Additional restrictions

- Seams may only exist in order to join the portions of the suit.
- Outer tucks and darts, folds and padding are not allowed.
- Material for jumping suits and underwear may neither be elasticised nor rubberised.
- The thickness of the suit may not exceed 5 mm.

Any modification intended to attain an aerodynamic change is forbidden.

4.1 Air permeability of the suit material

The material of a jumping suit must show a minimum air permeability which is the same from the outside in and from the inside out. Minimum air permeability is established as follows:
The unstretched fabric must show a medium air permeability of a minimum of 40 litres per m2/sec under 10 mm of water pressure.
This value is compulsory at the time of distribution by the manufacturer that means at the moment of plombing. At controls in competitions it must not be less than 30 litres.
Although usage may result in some stretching of the material, the back portion of the suit must show an air permeability as high or higher than the other parts of the suits.

4.2 Examination of materials, suits

The guidelines for minimum air permeability established by the FIS Control Procedures/Equipment Working Group in collaboration with the Federal h-stitute for Materials Control are valid.
Multi-layered materials are accordingly permitted for ski jumping suits, as long as they conform to the air permeability requirements in question and all portions of the suit are made from the same material.

5. Crash helmets

Only helmets are permitted whose shell and padding cover the head and ears. The National Ski Associations are advised to provide their teams with only crash helmets, which satisfy the minimum requirements and have been certified by recognised institutes.
Certain helmets must show a smooth top surface for safety reasons.

6. Ski goggles

Ski goggles are devices protecting the eyes against weather and rays with optically correct lenses. Their aim is to guarantee good, contrast-free visibility in all weather conditions. The use of goggles is recommended. Reshaping the ski goggles in order to attain more aerodynamic features is not allowed.

7. Ski gloves

Gloves offer protective covering against weather and external forces. The use of gloves is urgently recommended. The gloves must not be fin-shaped.

E. Starting Bibs

Alpine: Downhill / Slalom / Giant Slalom / Super G
Nordic: Cross-Country / Ski Jumping
Examples: See Enclosure 1

1. FIS Specifications for Alpine starting bibs

1.1 Advertising

Letters and logos may not measure more than 10 cm in height.

1.2 Numbers

Numbers must measure at least 8 cm in height.

1.3 Assignment

Starting bibs must be assigned as follows:
Ladies sizes: with elastic band
Men's sizes: with elastic band

1.4 Fabric, Material

T-shirt starting bibs, 100% Polyester / Interlock

1.5 Elasticity (stretch)

Measured on a piece of material 10 cm wide:
Stretchability in the width 24 cm.

1.6 Seams, Sewing

Side seams: Material is sewn together, hemmed and stitched - overlook.
Neckline and armholes are trimmed with edging and double-stitched.
Waistband with 2 cm wide seam, double-stitched with an elastic band pulled trough.
(See enclosure 1)

2. FIS Specifications for Cross-Country

2.1 Advertising

Letters and logos may not measure more than 8 cm in height.

2.2 Numbers

Numbers must measure at least 12 cm in height.

2.3 Assignment

Starting bibs must be assigned as follows and must be cut in such a way that the skier's shoulders are allowed free movement:
Ladies size: without elastic band
Men's size: without elastic band.

2.4 Fabric, material

T-shirt starting bibs in smooth material quality 100% Polyester / Interlock or 100 % polyester knitwear (meshed or non-meshed).

2.5 Elasticity (stretch)

Meshed starting bibs: measured on a piece of fabric 10 cm wide:
Stretchability in the width 18,5 cm
Non meshed starting bibs: measured on a piece of fabric 10 cm wide:
Stretchability in the width: 24 cm
(See enclosure 1)

3. FIS Specifications for Ski jumping starting bibs

3.1 Advertising

Letters and logos may not measure more than 8 cm in height.

3.2 Numbers

Numbers must measure at least 12 cm in height.

3.3 Assignment

Starting bibs are assigned to the men in men's sizes.

3.4 Fabric, material

T-Shirt starting bibs 100 % Polyester with an air permeability of 40 litres per m2/sec under 10 mm of water pressure.

3.5 Elasticity (stretch)

Measured on a piece of fabric 10 cm wide:
Stretchability in the width 24 cm.

3.6. Seams, sewing

Side seams: material is sewn together, hemmed and stitched - overlook.
Neckline and armholes are trimmed with edging and double-stitched.
Waistband with 2 cm wide seam, double-stitched with an elastic band pulled trough.
(See enclosure 1)

Procedures for the Acceptance of Innovations in Competition Equipment

Article 230.4 of the ICR reads as follows:

New developments must be submitted by May 1st, at the latest, for the following season. The first year new developments can only be approved provisionally for the following season and must be finally confirmed prior to the subsequent competition season.

1. Eligible applicants

a) Manufactures or distributors of the innovation
b) National associations
c) Members of the Committee for Competition Equipment

2. Items for application

Any fundamental innovation or further development, which is to be used as equipment in competition skiing, may be submitted for acceptance. It is solely the responsibility of the Committee for Competition Equipment to decide whether an innovation or further development conforms to the FIS „Competition Equipment Specifications". The Committee can at any time, however, arrange the execution of an application with regard to items of equipment to be used in competition sport, in accordance with the decisions of these guidelines.

3. Prototype, samples

The application must be dealt with in such a way that the innovation is described in detail. A prototype or sample must be included with the application. Relevant reports by scientific experts, as well as reports of experiences made by trainers or participants are to be submitted.

4. Decisions of the Committee for Competition Equipment

The Committee for Competition Equipment deals with these applications at its next meeting. If the Committee is of the opinion that the item being presented conforms fully to the valid Specifications for Competition Equipment, this decision will be set down in a relevant solution.
If the Committee reaches the conclusion that the innovation could be accepted in accordance with the relevant principles and decisions of the FIS Specifications for Competition Equipment in competition sports, the innovation can be provisionally approved for testing for the duration of the following season.
This approval can, however, also be conditionally accepted. On the grounds of fairness, exceptions can be made for certain competitions (Olympic Winter Games, World Championships, etc.).
However, the Committee for Competition Equipment can also take the following measures before provisional approval. These can be dealt with individually or together:

a) requesting applicants for further information, such as reports by experts and technical data
b) seeking reactions of the FIS Technical Committees. These opinions must be submitted in writing and take the following factors into cosi-deration:
    1. explanation with regard to the usefulness and necessity of the innovation
    2. opinions with regard to the safety of the innovation
    3. assurance that in accepting the innovation, the principle of fairness will be guaranteed
c) seeking reports by experts and other information through the Committee for Competition Equipment itself.

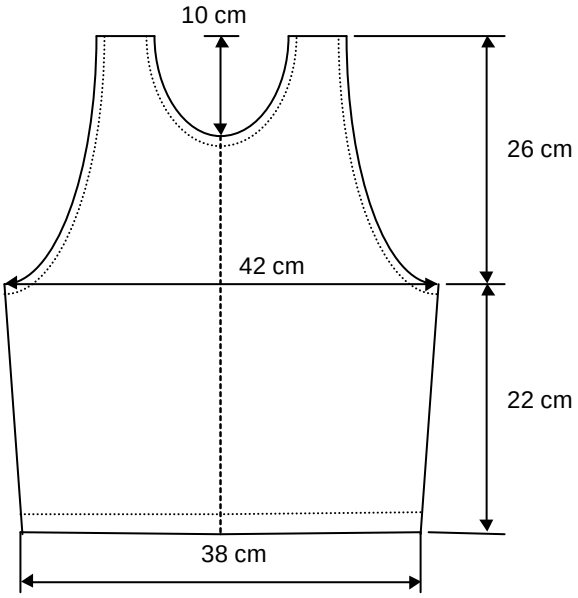
Should the innovation not conform to the principles of the FIS Specifications for Competition Equipment, either through the application itself, or in the course of the procedures, the use of the innovation in question will be forbidden for competition sport. This will also occur if, during the item's probation period, circumstances result which lead the Committee to decide that the innovation does not conform to the principles of the FIS Specifications for Competition Equipment. In such a case, the provisional approval will be rescinded, effective immediately.

5. FIS Council

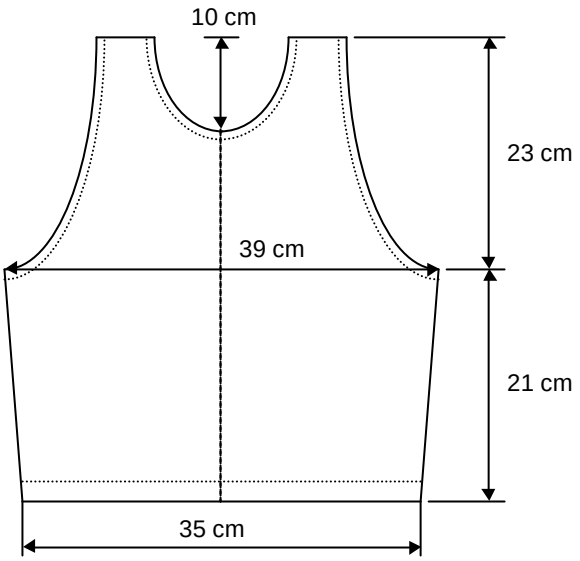
Changes in the Specifications for Competition Equipment can be proposed to the FIS Council only through the Committee for Competition Equipment - either by means of an initiative from the Committee itself or through an application of one of the National Ski Associations or Technical Committees to the Committee for Competition Equipment.

Enclosure 1

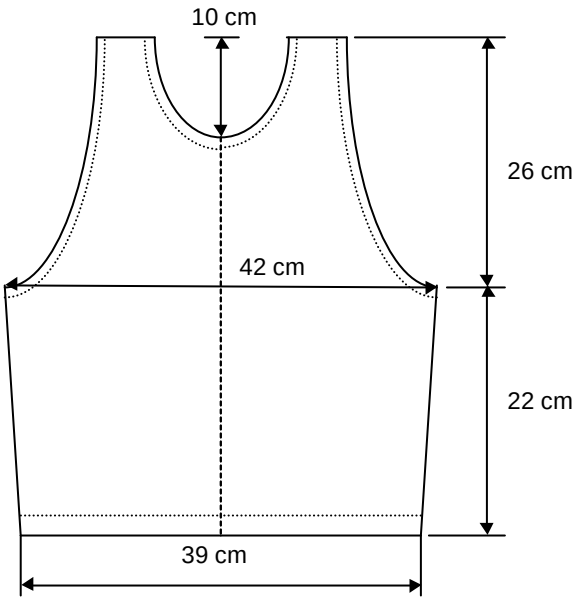
Ski Jumping: with elastic



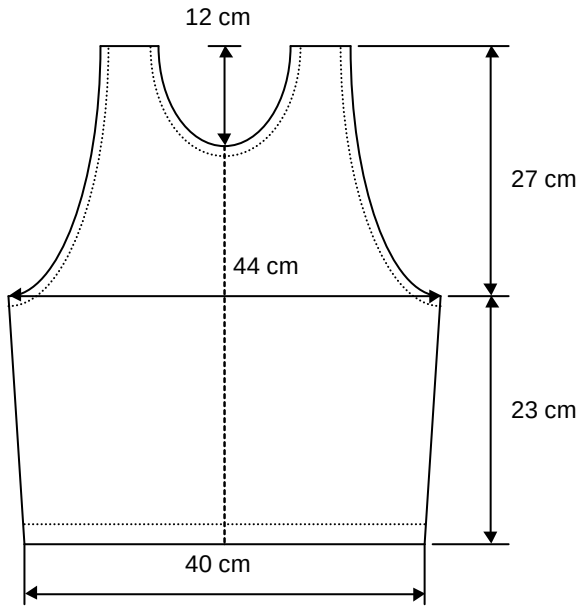
Alpine, women: with elastic



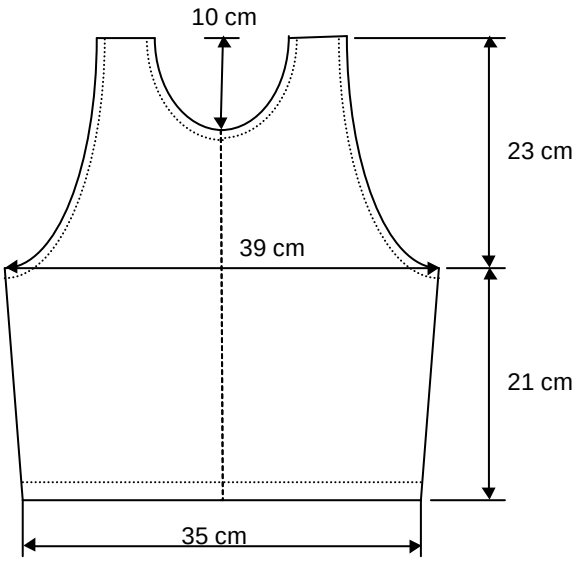
Alpine, men: with elastic



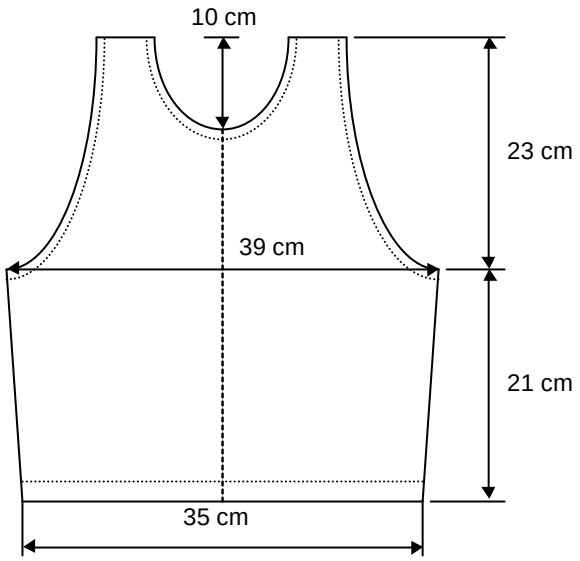
Cross-Country, men:
meshed without elastic



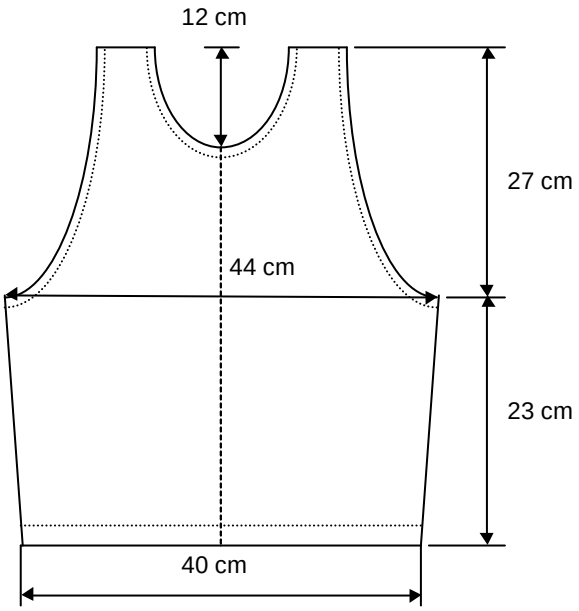
Cross-Country women:
meshed without elastic



Cross-Country,
women: without elastic



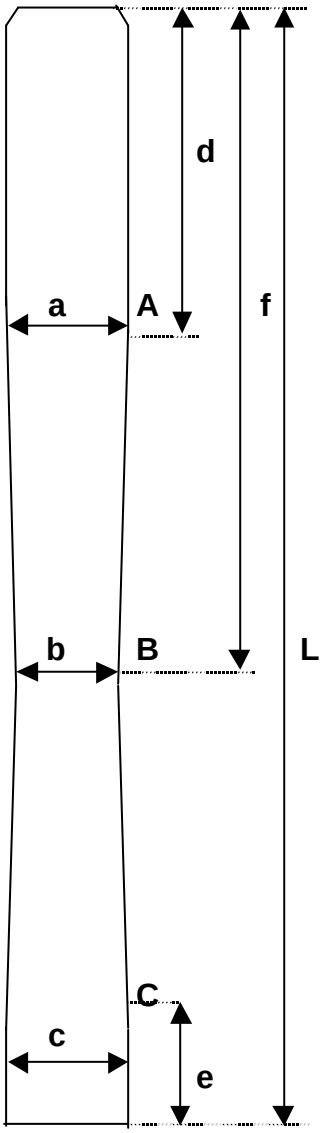
Cross-Country,
men: without elastic



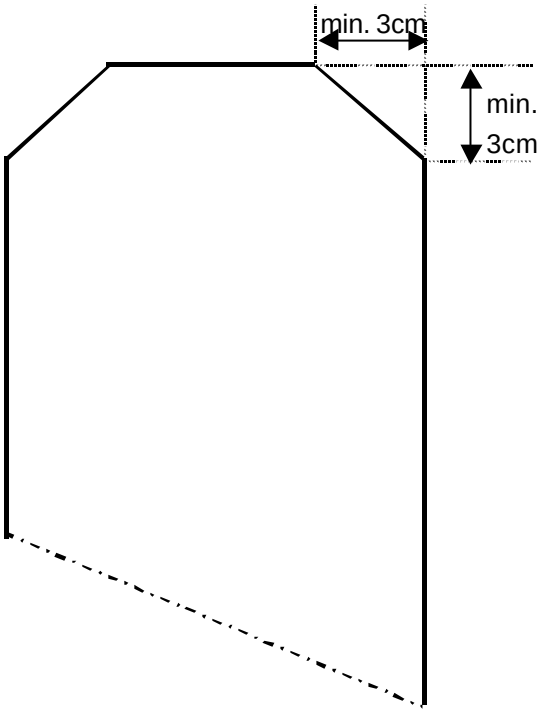
Enclosure 2

Article 1.2.1.2: Precision of the Profile Width

L	Ski length
a	max. width at front portion = 115 mm
b	max. width at 57% of front portion (f) = 105 mm
c	max. width at tail portion = 115 mm
d	max. length between tip and begin of sidecut = 300 mm
e	max. length between tail and begin of sidecut = 150 mm
f	control point of **b**



Ski-tip (max. frame)

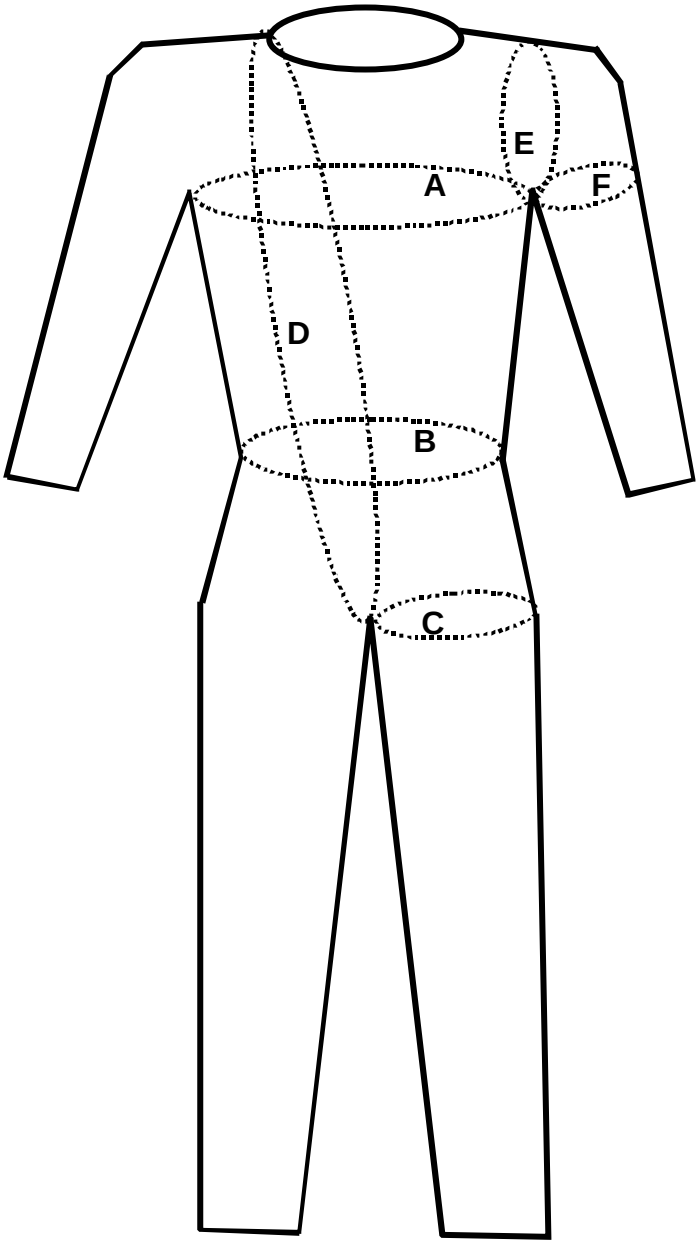


Enclosure 3

4. Ski Jumping Suits

The suit must have a uniform fit with the shape of the body.
The following tolerances apply (measured on the outer surface):

A: + 8 cm
B: + 10 cm
C: + 8 cm
D: + 10 cm
E: + 8 cm
F: + 8 cm



A, B, C, D, E, F: Standard measuring places

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