



## Designation: F472 – 11 (Reapproved 2017)

# Standard Terminology for Geometry of Alpine Skis<sup>1</sup>

This standard is issued under the fixed designation F472; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This terminology covers the terms required to describe the geometry of Alpine skis and does not cover special purpose skis.

1.2 The terms are presented in a sequence considered to be the most logical, with definitions presented later calling upon those presented earlier.

## 2. Significance and Use

2.1 A standard set of definitions is needed to allow manufacturers, consumers, retailers, and scientists to use a common language in describing Alpine skis.

## 3. Definitions (Refer to Figs. 1 and 2)

**ski tail, T**—the extreme rear edge of the ski.

**ski tip, S**—the extreme forward point or edge of the ski.

**ski size**—see the following:

*developed length,  $L_N$* —bottom contour length as measured from the ski tip to the ski tail, commonly called the material length.

*chord length,  $L_{TS}$* —straight line distance measured between the ski tail and ski tip with the ski pressed against a plane surface.

DISCUSSION—Either method at the manufacturer's discretion may be used to indicate nominal ski length or ski size when rounded to common increment.

**projected length,  $L_P$** —length of the projection of the ski, measured between the ski tip and the ski tail parallel to the ski body pressed against a plane surface.

**tail turn-up length,  $l_T$** —the projected length of the tail turn-up, measured from the ski tail to the contact point where a 0.5-mm feeler gauge intersects the running surface with the ski body pressed against a plane surface.

<sup>1</sup> This terminology is under the jurisdiction of ASTM Committee F27 on Snow Skiing and is the direct responsibility of Subcommittee F27.30 on Skiing and Snowboarding Equipment.

Current edition approved Jan. 1, 2017. Published January 2017. Originally approved in 1976. Last previous edition approved in 2011 as F472 – 11. DOI: 10.1520/F0472-11R17.

**shovel length,  $l_S$** —the projected length of the forward turn-up, measured from the tip to the contact point where a 0.5-mm feeler gauge intersects the running surface with the ski body pressed against a plane surface.

**contact length,  $l_C$** —the difference between the projected length,  $L_P$  and the sum of  $l_T$  plus  $l_S$  or  $l_C = L_P - (l_T + l_S)$ .

**tail height,  $h_T$** —the height of the underside of the tail from a plane surface with the center of the ski body pressed against that surface.

**tip height,  $h_S$** —the height of the underside of the tip from a plane surface with the center of the ski body pressed against that surface.

**thickness,  $t$** —thickness, measured perpendicular to the running surface.  $X_A$  indicates the location of thickness measurement from the tail of the ski.

**width,  $b$** —total distance measured perpendicular to the center line on the running surface.  $X_b$  indicates the location of ski width from the tail of the ski.

**heel,  $b_H$** —the widest part of the ski in the tail section of the ski.

**waist,  $b_M$** —the narrowest point of the ski body between the heel and shoulder.

**shoulder,  $b_V$** —the widest point, of the ski in the shovel section of the ski.

$X_{bH}$ ,  $X_{bM}$ ,  $X_{bV}$ —the  $x$  coordinates for the location of these respective widths of the ski measured from the tail of the ski.

**contact surface area**—the product of the average width times the contact length expressed quantitatively as follows:

$$A_C = \left[ \frac{(b_H + 2b_M + b_V)}{4} \right] [l_C] \quad (1)$$

**tail surface area**—that surface from the tail contact point aft. The tail contact point is located  $l_T$  from the tail.

**shovel surface area**—that surface forward of the shovel contact point. The shovel contact point is located at  $l_S$  from the tip.

**running surface**—the entire bottom surface of the ski bordered by the side geometry.

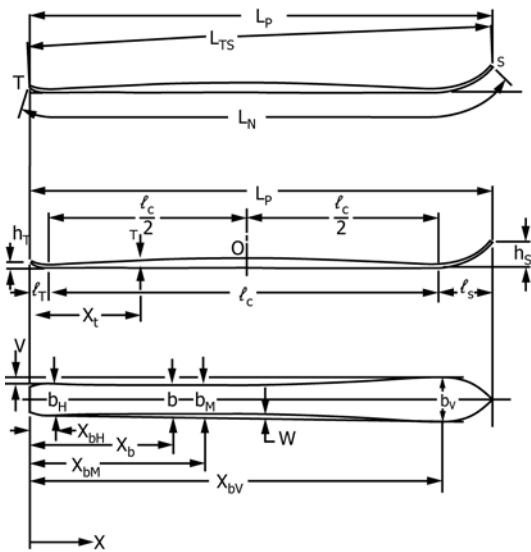


FIG. 1 Alpine Ski Locations

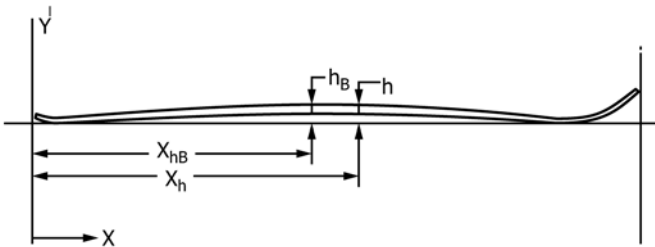


FIG. 2 Alpine Ski

**ski body center**—point  $O$ , which is located at a distance of  $l_c/2 + l_T$  from the tail of the ski.

**ski forebody**—that portion forward of point  $O$ , a distance of  $l_c/2$ .

**ski afterbody**—that portion of the ski aft of point  $O$ , a distance of  $l_c/2$ .

**ski body**—that portion of the ski within the dimensions of  $l_c$ .

**taper,  $V$** —half of the difference between  $b_V$  and  $b_H$  or  $(b_V - b_H)/2$ .

**camber height,  $h$** —distance between the running surface of the ski and a plane surface, measured with the ski resting freely under its own mass.  $X_h$  indicates the location of camber height from the tail of the ski.

**weighted bottom camber,  $h_B$** —the maximum height of the running surface measured from a plane horizontal surface, with the ski held in a plane horizontal orientation and thus subject to deflection due to its weight under the influence of the ski weight.  $X_{hB}$  is the location of  $h_B$  from the tail of the ski.

**free bottom camber,  $h_F$** —the maximum height of the running surface measured from a plane vertical surface with the ski on an edge, free from the deflection caused by its weight.  $X_{hF}$  is the location of  $h_F$  from the tail of the ski. (Not shown in Fig. 1 or Fig. 2.)

**ski radius,  $r_s$** —The approximate radius of the circular sector defined by the tip, waist, and tail, expressed quantitatively as follows:

$$X_1 = 0.8 \cdot (L_p - X_{bM}) \quad (2)$$

$$X_2 = 0.9 \cdot (X_{bM})$$

$$r_s = \frac{[X_1 + X_2]^2}{2 \cdot [b_{X1} + b_{X2} - 2 \cdot b_M]}$$

Should be reported to within  $\pm 2.5\%$ .

**side geometry**—the configuration of the curve bordering the running surface and defined by the bottom edge.

**side cut**—that line describing the curved portion of the ski contour limited by the lines at the  $b_H$  and  $b_V$  dimensions, and defined by the bottom edge.

**side camber,  $W$** —the maximum distance from a line drawn between the widest points of the ski and the sidecut of the ski.

*This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.*

*This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, Tel: (978) 646-2600; http://www.copyright.com/*