

**FLEX:** Track skis generally have a soft tip and tail and a stiffer middle. This allows the ski to follow the track more easily. Skating skis have a stiffer tip for more control at higher speeds. Skis made for turning (telemark, alpine touring) have a soft even flex to 'reverse' the camber when weighted during a turn. This exaggerates the sidecut and makes the ski turn more quickly. A stiffer flex ski is easier to control on crust and unpredictable 'crud'.

## BOOTS & BINDINGS

**NNN-2, SNS:** New Nordic Norm Two (NNN-2) and Salomon Nordic System (SNS) are primarily designed for track and skate skiing. They are lightweight and best suited for striding. As the boot pivots on a bar at the toe of the boot, the sole can be made stiff for torsional rigidity. The boots can be low cut and flexible or moderately high cut for ankle support.

**NNN-BC:** New Nordic Norm Back Country (NNN-BC) are similar to NNN-2 but heavier and more suited to light backcountry skiing.

**75mm:** The 'old' Standard Nordic Norm utilizes either 3-pin, cable or a combination of 3-pin and cable. This system is used mainly for backcountry touring and telemark skiing. It can handle rougher treatment and is more easily repaired in the field. The boots are usually heavier: double leather or plastic are common for telemark skiing. The boot must flex both at the ball of the foot and at the ankle.

**ALPINE TOURING:** As opposed to the above telemark or 'free heel' systems, the alpine system has the toe and the heel of the boot fixed to the binding for maximum parallel turning ability, similar to downhill systems. A quick adjustment allows the heel to be 'free' for flat or uphill terrain.

## SKI POLES

Ski Poles vary in length as to the type of skiing:

Skating poles are the longest for double poling.

Classic Nordic poles are long for striding and gliding.

Telemark and Alpine poles are short for turning.

Some poles adjust in length; longer for poling, shorter for turning.

## ACCESSORIES

**CLIMBING SKINS:** allow skiers to climb steep slopes when grip wax fails. The directional grain of the 'skin' prevents the ski from slipping back, but allows for acceptable forward glide. Mohair or synthetic skins attach to the ski base by a glue impregnated on the skin or by straps.

**GAITERS:** keep snow out of ski boots and provide additional warmth.



# SKI EQUIPMENT

## SKIS

Skis vary greatly from track-set racing to alpine touring. Five factors determine the characteristics of a ski: **width, length, sidecut, camber, and flex:**

**WIDTH:** Narrow cross country skis glide faster on groomed trails than wide skis. Novice skiers will feel more stable on wider skis, however 65mm tips are the maximum for trackset skiing. For off trail touring, wider skis are better for floating on powder, for staying on top of crust, for trail breaking, and for giving stability.

**LENGTH:** Length has become less important as technology has enabled camber and flex to determine ski performance. Shorter skis are generally easier to control. Longer skis are generally faster. For off trail touring shorter skis are easier to turn. For trail skiing longer skis provide better glide.

**SIDECUT:** The difference in width from the ski tip to the ski waist is known as sidecut. Skis with more sidecut are easier to turn, however extreme sidecut skis will not track as easily on flat terrain. Classic Nordic skis have little or no sidecut (sometimes negative) to run straight and fast on track-set trails. Skating skis have no sidecut for pushing and gliding on the ski's edge.

**CAMBER:** An unweighted ski will touch the ground only at the tip and the tail. The springiness that causes the middle of the ski to lift off the ground is called camber. Most touring skis have a soft single camber that allows the skis to flatten against the snow when the skiers weight is evenly balanced on both skis. Too much camber will cause the ski tips to sink under the snow. Classic Nordic skis usually have a double camber. A second stiffer camber under the bindings allows for a grip wax pocket. When a skier's weight is evenly balanced on both skis, the pocket keeps the grip wax off the snow. To enable the grip wax, a skier kicks down and pushes off on one ski. Skating skis have a stiff single camber as they do not use wax for grip, but use the ski's edge to push off from.

# SKI EQUIPMENT

	SKATING NORDIC	CLASSIC NORDIC	LIGHT TOURING	BACKCOUNTRY TOURING	TELEMARK TOURING	ALPINE TOURING
<b>Best suited to:</b>	skating on groomed trails	stride and glide on track-set trails	track-set, trail touring	trail & off trail touring, easier telemark	off trail touring, ski mountaineering, telemark turns	off trail touring, ski mountaineering, parallel turns
<b>Width (Waist)</b> less for speed more for control	43 to 50 mm	43 to 50 mm novice: 47 to 55 mm	47 to 55 mm	55 to 60 mm	60 to 65+ mm	65 to 75+ mm
<b>Length</b> less for control more for speed	head height or shorter ('shorties' are 150 cm)	ski tip to upraised wrist head height + 30 cm	180 to 210 cm head height + 20 cm		170 to 200 cm head height + 10 cm	160 to 190 cm head height
<b>Sidecut</b> less for tracking more for turning	none	-3 to 3 mm novice: 3 to 8 mm	5 to 10 mm	8 to 12 mm	10 to 20+ mm	20 to 25+ mm
<b>Camber</b> single for turning double for striding	stiff single camber (to push off from)	stiff double novice: soft double	soft double camber	moderate single camber	soft single camber	
<b>Flex</b> soft for turning stiff for control	stiff tip for high speeds	soft tip & tail to track; stiff middle	a compromise between nordic striding and telemark turning		soft even flex for turns in powder or stiffer flex for control on hard packed	
<b>Metal Edges</b>	No		Usually no, or ½ length	Yes: metal edges offer more control on ice and crust		
<b>Wax</b>	glide wax only	grip wax novice: no-wax skis	grip wax climbing skins for steep slopes		grip wax (wears quickly with soft single camber) or glide wax with climbing skins	
<b>Bindings</b>	NNN-2 or SNS: boot pivots on toe bar for maximum movement; boot grooves fit binding ridges for glide control		NNN-BC: boot pivots on toe bar; 75mm pin or cable		75 mm cable: heel is free for turns and tours	alpine touring: -heel is fixed for turns (with safety release) -heel is free for tours
<b>Boots</b>	stiff plastic sole for torsional rigidity; moderate high cut provides warmth and ankle support		moderate high cut for ankle support; torsionally stiff for control; 75mm: ankle and toe flex		torsionally stiff leather or plastic; ankle & toe flex for telemark turns	stiff, high plastic boots: turns: cuff is fixed tours: cuff is hinged
<b>Poles</b>	shoulder - nose height	armpit - shoulder height	nordic length for poling adjustable poles are a good option for both poling and turning			

**Notes:**  
Ski equipment generally gets more robust, heavier and expensive from left to right (Skating Nordic to Alpine Touring)  
Much of this information came from retail catalogues and an article in the Dec, 1995 issue of Explore Magazine by Alf Skrastins and Glen Cowper