Base Bevel – the "Heart & Soul"

By Dave Peszek

This is the second in a series of articles on ski and snowboard tuning that will appear this season in Ski Racing. Each issue, we'll tackle different topics that arise in the preparation and maintenance of alpine and nordic skis and snowboards. The author will attempt to answer any tech questions that you may have – Pez@holmenkol.us.

If you have been following along, in the last issue we discussed the importance of starting the season off with a well cleaned & waxed quiver of skis. This issue, we will dive right into what a good friend calls the "heart & soul" of a ski – base bevel.

Graham Lonetto, owner of Edgewise Elite Service in Stowe, VT & former WC women's technician, has studied the interplay between base bevel, slope pitch, and time through a GS training course. "One of my athletes was skiing fast on steep pitches but loosing time on the flats, so we did quite a bit of testing with base bevel. We found that increasing the base bevel allowed the athlete to be less harsh on her edges. This allowed the athlete to let the skis run downhill rather than across the pitch, drawing out the turn" says Lonetto. The testing consisted of equally prepared GS skis and considered angles of one half, three quarters, and one degree of base bevel of the athlete's GS skis. This leads us to the statement that base bevel is the "heart & soul" of the ski. Small changes in the bevel contribute drastically to the skis on snow feel, performance, and ski-ability. The important thing to learn from Graham's testing & WC experience is that base bevel is a hugely important variable, but also one that is subjective to you & your particular equipment setup. Change any one factor and they all are affected.

Virtually every ski today comes from the factory with a high quality stone grind, and often the base edge is "relieved" from the base material. This is a description for a factory process where the base steel is made roughly parallel to the base material, but set very slightly below the level of the plastic. When you, your coach, or your favorite shop inspect the factory base bevel, be sure to determine if the base side steel is actually angled (and how much) or if it is relieved.

One way to check your base bevel is to lay your true bar across the ski and carefully hold the bar flush against one base edge, testing in several spots along both edges of the ski. If you can lay the true bar flush against the steel, you have a base angle. Does the true bar just touch the corner of the steel & the base material? If so, you have base edge relief. Now examine the gap that is present on the other side of the true bar. Measure this gap in several places along the length of the ski. Ideally, it is consistent throughout the ski's length. I like to see between 1-2 mm of consistent gap under the true bar – of course this is personal, and you need to test yourself to decide what is best. I also like to use an old gap dwelling tool or valve clearance guide to measure this distance (bonus points if you have one lying around!).

Many athletes will choose to start at one half degree and test from there. Remember, it is always easier to increase base bevel angle. Decreasing the angle requires extensive, precise, and very skilled stone grinding. Be sure to set every ski you own for that given discipline at the same angle, and check for consistency of angle throughout the season.

As far as the actual technique of applying the base bevel, just follow a few simple guidelines:

- Cleanliness is godliness – keep all the filings away from the ski using an inexpensive paintbrush.
- Always pull the file so that the filings are ejected away from the base material not into it. If you are right handed, that means the tip pointing towards your left and file the furthest edge, then flip the ski and place the tail towards your left and file the furthest edge away from you.
- Use the sharpest, smallest, straightest file you have. I ALWAYS check my files with a true bar before using them. Especially check the file for "tail", which is when you have a nice straight file but the last centimeter or two veers off course. If this happens, don't be afraid to break that section off. For base beveling, I like to use the finest file I can, and choose one that has very shallow tooth height. This yields a more precise cut and the file cuts less with each pass, allowing for more accuracy.
- Use only high quality files made specifically for ski tuning. The files from the corner hardware store definitely won't do the job here.
- Watch carefully to ensure that file is not cutting the base material.
- Hold the file and file guide precisely. Press straight down, with gentle to moderate pressure (don't bend the file). Let the sharp file do the work.
- Pull in long, smooth, overlapping strokes. Count your strokes so that you pull the same number at the tip, middle, and tail, on both sides, and on both skis. Brush the file & ski clean after each pull using your paintbrush.
- Polish the base steel with a hard Arkansas or ceramic type stone.

Next issue, we will tackle shaping the ski.
Remember, the race to win starts now!

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