

Ski Tuning

Tools to tune your edges:

- Ski vise
- Ski keeps (to pull back brakes)
- Sidewall planer
- Base filing guide
- Edge angle guide and clamps
- Deburring stone
- Good quality med/fine file
- File card or brush (nylon)
- Diamond stone (4")
- Edge polishing stones (Med and Fine by Swix)
- Brass brush
- Course nylon or horsehair brush
- Soft horsehair brush

Before you tune

- Before you start to tune your edges it is important to assess the flatness of your equipment's bases. A flat base will ensure that the transition from edge to edge is consistent. The best way to check the flatness is to use a 'true bar'. Spanning the base and the base edge (placing it across the base of the ski base, perpendicular to the tip and tail, move the tool down the whole length of the base (from base of the shovel to the tail). The tool should not only sit flat across the base, but also no light should be visible between the base and the bottom edge of the tool. Any visible light would be an indicator of a concave base, commonly described as 'edge high or railing'. The opposite situation, where the tool doesn't sit flat across the base due to a high center condition, is known as 'base high'. Skis are constructed in a mold and heated to bond all the layers together. Skis will commonly have some warp and twist qualities as a result of this process; this is usually corrected at the factory by stone grinding them. However, ski manufacturers make thousands of pairs of skis and the bases may not get the finish (flattening) needed for optimal performance. The 'true bar' is not mentioned in the tool list because this is an expensive tool that is used in any shop that uses a stone grinder. The technicians at a shop that offers stone grinding will check and recheck ski bases with this tool to monitor the progress of the grinding process. If you find, or suspect, your bases are not flat take your skis to the shop for grinding. Lastly, remember that stone grinding not only flattens the bases, but also imparts a 'structure' in the ski base for optimal water shedding.
- If this is something other than a first tune, you may have nicks in the edge surface. Gently rub these areas with a diamond stone until the protruding deformity is gone. The diamond file will reduce the hard spot by cutting away the 'hardened' material, allowing you to file over the spot. This will prevent your file from 'skipping' over parts of your edges when tuning them. These portions are actually heated up from the impact with a harder object (case hardened) and therefore need to be filed with a harder material (diamond stone) to 'soften them up' for the file. Rusted edges can be

taken care of quite easily using a piece of light sandpaper (180 grit or higher) or some Fibertex. Simply rub over the rusted area until the rust is gone.

Edge Concepts - After ensuring the bases are flat, it is time to work on the edges. There are two parts to an edge, the base edge and the side edge.

- *The base edge* is the portion of the edge you see when you look at the base of the ski (or board). This edge can be beveled to determine how much the equipment's user will have to 'put the ski on edge' before the edge 'hooks up' (digs in).
- *The side edge*, is the portion of the edge you see when you view from the side of the ski. This edge can also be beveled to change the way the edge holds. I think it is best to think of this part of the edge tuning process as the way to control how the ski 'holds' on edge. The more bevel used, the more 'pointy' the edge will be. A 'pointed' edge will hold great, but may not 'let go' as easy in icy conditions (New Englander's can relate to this). As with any edge tuning guidance, the best advice is to experiment using small incremental changes; if you bevel too much you will have to remove a lot of edge material to reduce the bevel. In side edges this is especially important because there is not a lot of material there to start. Another important thing to remember is to always follow recommended tuning bevels from the manufacturer of your equipment.

Base edge tuning - Place the ski in your ski vise with the base facing up. Always work on the edge furthest away from you, this will allow for a more stable position to work.

- Using a file and bevel tool, work in steady, even pressure movements down the edge. It is not important whether you go from tip to tail or tail to tip, just keep it consistent. Continue to work the file down the edge until no more filings from the edge are coming up. Remember to keep the tool flat and level, if it's not level it will not file the edge to the desired and consistent bevel.
- Keep the file and the base clean. Wipe off filings to keep them from damaging the base, keep the file clean too; a dirty file will not cut well or last very long.
- After filing, repeat the process with a medium (blue) diamond stone, then a medium polishing stone and a fine polishing stone (polishing stones cost \$20 each). When finished, the edge surface will be polished like a good cutting knife. A racer is on edge more than on base. Polished edges often are more valuable than wax, especially on icy days.
- Most manufacturers call for a 1-degree base bevel. You may elect to have a GOOD shop tech do the initial base bevel. Once this is "in" you will normally only polish it with stones (using the bevel guide) during each tuning. I only fully rework the base bevel about every 20 ski days.
- The bevel tool used will be dependent on how high a degree of accuracy you want. The more expensive tool (Precision Base File Control) will be more durable than less expensive versions (Base File Control). Racers and avid skiers will most likely prefer to use the more expensive model, while other skiers may find the less expensive tool more than adequate. The more often you use the tool, the better off you are to use the more expensive one. The durability of the tool will dictate how long it will last and how consistently it will produce the angle desired. I use Sun Valley Tools, although Toko also makes some good products. A good base bevel will cost about \$90.

Side edge tuning - To work on the side edge angle, place the ski in the vise so that the side edge is facing up.

- You may find at this stage that the sidewall (plastic) of the ski is bulging out too much to allow you to use your side edge tool. Often there will be a seam from the molding process that sticks out. Using the sidewall planer (The Sun Valley planer is the Cadillac – cost is \$90-100) remove the material, just remember to remove only what you need to use your edge tool; removing too much could damage the ski.
- Using the side edge bevel tool, work in the same manner as you did on the base edge. Continue to file until the resistance on the file becomes almost non-existent and the edge is shiny and sharp. It shouldn't take more than two or three passes to do this, just remember not to take off too much. After filing, do the entire stone process.
- My weekly tuning regimen uses only stones. Normally edges can be brought back to 100% sharpness by a pass with the diamond stone, followed by the polishing stones. On race day I always carry the polishing stones and touch up the bases after course inspection.
- The final step is to gently deburr the edges. This is done by taking the fine stone, laying it on the base edge (use a file guide until you are well practiced) and gently running it down the full length of the ski one time. This removes the harshness of the cut. You can feel the subtle difference by feeling the edges with your fingers before and after doing this. Some racers like to leave the burr on icy days – I do not.
- To check the finish of the edges, slowly (!!) run your fingers down the edges feeling for burrs or rough spots. The edges should feel smooth, like glass, as well as sharp.
- After you're satisfied with the edges, its time to 'de-tune' the portions of the edge you don't use. What I mean here is ONLY the parts of the ski that are not in contact with the snow when the ski is lying flat. Detuning any contact surface went out with non shaped skis. Just use the medium polishing stones and make a couple of rubs at a 45 degree angle with the edges.

Daily Maintenance - Daily maintenance reduces the need for tuning and extends the life of the ski.

- The most important step in ski maintenance is the use of keepers whenever skis are carried or stored. One drop, one "scissoring" incident and you are back to the drawing board with base and side filing. If I find one of my racers without keepers on their skis I refuse to tune or wax again until AFTER the next race. They have learned.
- The second most important daily maintenance step is drying the ski after use; this prevents rust that will later have to be filed away. A ski is not dry until it is warm and dry. Initially dry the ski when bringing it indoors or loading it in the car. Attempt to remove all snow on both sides of the ski. Dry the ski again once it is at room temperature.
- Maintaining your edges is a simple process and uses the same tools listed above. Most edge damage is caused by hitting a rock or other hard substance. The edge will not only be dulled, but will be scratched deeply and possibly deformed (dented). Using a diamond file gently rub out the deformity, then make a pass or two using the file guide. Polish with a stone and you are done. Do not try to file out every nick or indentation. Your edges will disappear before you know it! In closure, remember to keep up on the edge care, but not to overdo it. Too much filing of your edges will reduce the life span of the ski. The conditions you ski upon will determine how often you need to work on your edges.