

Waxing and Tuning Skis and Snowboards

Introduction

Snowboard/Ski maintenance has much associated voodoo, and everyone has their own way of doing these things. Keep yourself open to these differences, as some are real gold.

That said, this is how I personally tune my skis and snowboards (my voodoo). I have never done this professionally, but I do it myself because I get better results faster, and even over the short run its way cheaper.

These are my **personal unedited notes**. Chime in if I missed anything, or for any typos. I hope to add photos sometime this season (2009 - 2010).

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USE AT YOUR OWN RISK.

THESE INSTRUCTIONS ARE TO SHARE MY PERSONAL NOTES WITH OTHERS WHO ALREADY MAINTAIN THEIR OWN EQUIPMENT.

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Equipment and Tools

- Wax: A good, durable, all temperature wax such as Hertel Fluorocarbon Racing Ski Wax- FC739. That particular wax outlasts and out-performs everything I've ever used, especially among the all-temperature varieties. It's about \$45 for a 3/4 pound brick (Amazon, or from Hertel), which is the size I use because it covers a lot of area for the way that I prefer to wax snowboards and skis (a combination crayon / drip method). Most (but not all) boards come from the factory with a rub-on or other wax coating. Ride that coating off & then hot wax the board. If really picky, hot wipe the board and go with your own wax from the get go.
- Wax iron: I go with the Swix Pro Performance Waxing Iron. Its a popular iron among professional ski shops I hang around in from time to time, and private users who demand quality, dependability, ease of use, durability, and gentleness on equipment. Good for frequent waxing as it minimizes waxing time. One way or another, you always pay for cheap irons.
- Wax iron paper (optional): Swix Fiberlene T151. Cleans, eliminates scraping, saves wax, reduces waxing time, keeps iron clean, etc. It's a 'quickie' hot wax. Some of my buds keep it around for emergencies, like when it's dumping big time

outside and they don't have the time to do the full treatment. I have not used it as I set things up after coming down off the mountain.

- Plastic scraper: This tool makes all the difference. I prefer mine wide and slightly bendable so its easier to bust off harder waxes. Get the ones with the side notch for edges (plenty do not have this notch and are junk, IMHO!). Recommendation: Toko 4mm PlexiBlade (\$8.00 Amazon) is awesome.
- Metal scraper (optional). I use mine to remove P-Tex after surface repairs. Surface repairs are covered at the end of this document.
- Scraper sharpening tool: A long flat file, or sandpaper. Specialty tools, such as a file with mounted right-angle scraper guide, are ultimate and I highly recommend them. The Swix Plexi sharpener T409 is the real deal.
- Stiff Nylon wax brush. Green 3M nylon or Scotch Brite pads can also be used, but are not nearly as good in exposing surface anti-suction channels. Here are some picks: Wintersteiger Nylon Structure Brush (\$13.50, no hand strap, REI). Swix White Nylon Coarse Brush (\$16.95, no hand strap, at backcountry.com). Swix Blue Nylon brush T160. Swix Oval Nylon brush w/hand strap (\$39.95 Amazon). I prefer the ones with the hand strap.
- Fine-bristled horsehair brush. These get the very last bits of wax out of the anti-suction channels to squeeze the very last drops of performance possible from the running surface. Also gives a nice, professional shine. It's the only tool for bringing out fine detail. Here is the one I use: Swix Horsehair brush (red, square, no hand strap, \$24.95 Amazon).
- Optional: post-scrape materials: Swix Fibertex (\$9.50 REI) (optional). This is good for wiping down the board after scraping, right before brushing. I use it when I got it.
- Workbench (optional): I use a sturdy wood table. At the resort, the floor and some books will do the trick. In all cases, I use a foldable light canvas tarp to catch wax shavings and droppings. The Swix pro tuning table (299.95 last I checked) is a stout, portable table, but for fixed locations, nothing beats a solid table with lip space for vises.
- Ski/Snowboard tuning vises: The Swix T0140 Workshop Vise is quite the luxury item (\$399.00, <http://www.artechski.com/swixworldcupviseworkshopvise.aspx>). Ski and snowboard compatible. It can side-clamp a snowboard for waxing. It's truly nice, but not critical. Has guide tracks that bolt into the work surface. Another of the many to consider is the TOK-4262 Ski vise set (3 vises, \$109.95, http://tognar.com/vises_benches_tuning_waxing_ski_snowboard.html) plus pair of TOG-SNOB 12" snowboard platforms (\$39.95/pr, tognar.com) is a better alternative for non-dedicated and portable work surfaces.
- Base cleaner: The kind made from citrus oil is gentler on you, your board, and the environment. I use base cleaners whenever I need to do base repair work or when the surface is really junked. For basic cleaning I use a weak citrus spray to remove gunk and grime, followed by an alcohol wipe to dry the surface and extract any minute, residual particles (especially after edge tuning).
- Base prep (cleaning) wax (optional): You can usually just use your regular wax for hot wiping, unless it has a very low melting temperature or very costly. For

such cases, consider Swix Base Prep Wax (or Swix CH10) for Hot Wiping (covered in the Hot Wipe Procedure).

- Bronze brush: Used after scrapping. Recommendations: Swix Bronze All Round Brush (\$16.99 Amazon). Swix Bronze Brush (red, square, no hand strap, \$27.00 Amazon). *Swix Oval Brass brush (red, oval, with hand strap, \$49.95 Amazon). Swix bronze brush T162 (or T182 oval). Again, I prefer having the hand strap.
- Ski brake retainer: About \$2.50 for a dedicated mechanism, or use a heavy rubber band. These keep the ski's brakes retracted and out of your way when doing surface work.
- Edge deburring tool: These take out burrs (dents and protrusions) along your edges. Lube these with water. Don't deburr edges with conventional (non-carbide/non-diamond) files as they are not hard enough to deal with impacted steel edges, which are harder than non-impacted edges.
- Gummie carbide stones: Recommendation: Swix diamond stone TAA400, 70mm.
- Edge tuning file w/guide: These straighten, sharpen, and angle your edges. These tools work by angling the tool/file to the snowboard's base. In a pinch, you can set a 1-degree bevel by wrapping electrical tape five tight turns around a long file, using the tape to impart a base angle. Examples: Swix Edger Pro Sharpener (Edge: 85-90 degrees, Base: n/a adjustable \$59.95 Amazon). Swix Edger 2x2 Edge Sharpener (Edge: 88 and 89 degrees, Base: 0.5 and 1 degrees adjustable \$19.95). Swix Edger Comp Tool (Edge: 85-90 degrees, Base: 0.5 and 1 degrees adj. \$40.00 REI). Swix Edge File Guide w/roller bearings & clamp (Side edge only, adjustable, \$45.95 at backcountry.com).
- Sidewall removal tool (very advanced): This tool removes sidewall material to allow you to install a side edge bevel (covered in the Edge Tuning Procedure section) in cases where the board or ski has too much material overhang. Examples: Swix TA101 (\$69.95 Amazon, a rip off as Appalachian Outdoors has it for \$44.00). NOTE: spare round blade is the Swix TA100R. Another is the SkiMan ErgoRazor (the Swix ta101 is an economy version of this, I've heard- <http://www.epicski.com/forum/thread/68599/legend-8000-sidewall-cutting-and-structure>), but I have not used that tool.
- Angle reading tool (super optional): These tools display the degrees of bevel in the base and side edges. You need to know these angles prior to tuning, but there are other ways to obtain them. Example tools: SVST Pro Bevel Meter (\$260.00, <http://www.slidewright.com/products.php?cat=73>). Maplus Side Edge Bevel Meter (\$64.99, [slidewright.com](http://www.slidewright.com)).

Good alternative: use a file edge guide with a fine grit file (to minimize material removal) along an inked edge. Full ink removal indicates an angle match, all else is a mismatch though the ink partly removed indicates greater or lesser angle by its position on the edge. An adjustable edger helps you check ranges of angles quickly.

- P-Tex Base repair material: You light these up with a cigarette lighter and drip them into damaged base areas (covered in the base repair section). Example: Swix P-Tex 4-pack (\$9.95 Amazon)

- Single-edge razor blade: Used to remove plastic damage, before further plastic ripping exposes the board internals, requiring a more comprehensive repair.
- Cork (optional): Try it as a wax buffer. Example: Toko Plasto Cork (synthetic cork; \$5.60 Amazon)

Procedures

Surface Prep and Waxing Procedure:

NOTE: Everything here is tip-to-tail in direction, though technically speaking it does not have to be. However, where it has to be it is important, so to minimize errors everything is tip-to-tail. Only in scraping and especially brushing is tip-to-tail motion especially required.

0. Inspect for damage and edge condition. Take care of any damage or dull edges and base damage before waxing.

Tune edges before waxing. This ensures a good metal-to-metal contact between the edges and the filing tool for the sharpest possible definition. It also keeps wax from gunking up your edge tuning tools and stones.

1. (Snowboard only: loosen binding screws. Tight screws create a slight depression of the running surface, resulting in inconsistent wax application. In addition, wax iron heat may change the screw grip). Secure snowboard / ski with bindings down (horizontally inverted).
2. Clean base at room temperature. You can use alcohol on a rag, used sparingly, then brush or, for dirty boards, the hot wipe method (see Hot Wipe Procedure at the end of this section). A weak citrus cleaner sprayed on and wiped off works well to remove dirt. Follow this with alcohol for additional cleaning and to dry the board.

Pay particular attention to the cleaning if you have just tuned the edges. You do not want to integrate metal shards into your surfaces, which the waxing process will do with any foreign material.

NOTE: Some base cleaners accelerate base (polyethylene) oxidation and should be reserved for base repair work. In such cases use citrus-based cleaners as they are much safer and easier on everything.

3. Warm the iron to wax-specified temperature. Test temperature with a sample of wax. It should be just hot enough to melt the wax, no hotter. Smoking wax == iron too hot, which damages the wax and ski/snowboard surface.

4. Rub wax bar along surface in long tip-to-tail strokes, covering entire surface. Soften wax on iron as required. This is called 'crayoning'. Some knowledgeable folks skip this step and go right into dripping wax instead, while other crayon-only. This is only how I do it. Use what works for you.

After crayoning, drip dime-sized wax drops a few inches apart randomly across the surface.

5. With iron heating surface covered with ironing paper (optional), move iron in one continuous motion, from tip-to-tail, creating a 2-4 inch molten wax layer behind the iron. Do not apply downward pressure on the iron. Typical pass time for a typical ski or snowboard: 15-20 seconds. Repeat 2 or 3 times.
6. Let base cool to room temp (at least 30+ minutes) to allow wax to set and bind to the surface pores. My personal **minimum** at 70 degrees is 45 minutes.
7. (seriously optional) Repeat steps 5 and 6 (iron & cool) two more times, for greater wax penetration and durability, if desired, or for layering on different waxes (advanced).
8. Inspect plastic scraper for sharpness. Recondition edge on sandpaper, file, or **purpose-built tool (highly recommended)** as required. A sharp scraper edge is essential.

With sharp, burr-free plastic scraper, scrape wax in overlapping strokes (about 5 or 6) along entire length, tip-to-tail.

Avoid over scraping / gouging as this can obviously damage the surface.

Angle the top of the scraper 45 degrees towards the tail and push (or pull) towards tail, moderately bearing down on the scraper.

Repeat twice with a continuous tip-to-tail scrape, or until very little wax is coming off.

Scrape surface edges as well (better scrapers have a notch for this work. Get them).

Desired result: essentially a wax-free surface with surface pores solidly filled with wax.

9. Brush surface with a brass bristle brush, tip-to-tail, to expose clean base structure. The structure, fine lines along the length of the surface, helps to reduce water suction. Don't press so hard as to wreck your bronze bristles! About 10 strokes.

10. Brush (short, quick strokes) tip-to-tail with a stiff nylon brush or heavy-duty nylon-scouring pad (green 3M pad) until not much wax comes off the surface (15-20 strokes).
I personally use only brushes.
11. Brush surface with a fine-bristled horsehair structure brush. I personally consider this a critical step not to miss.
12. Snowboard only: flip board-binding side up and tighten binding screws to specification (recall we loosened these at the beginning of the procedure).

Hot Wipe Procedure

- a) After cleaning the board with citrus spray / alcohol as described earlier, hot apply a layer of soft wax (base prep wax) onto surface as earlier described earlier in the Waxing section and scrape it off while it's still hot, finishing with a rag wipe. Repeat if desired.
- b) Execute two full-length surface passes with a bronze brush.
- c) Wipe surface with a Fibertex (or equivalent) or stiff nylon brush pad to remove residual particles. Again, I usually always use brushes.
- d) Finish with a medium nylon brush.
- e) After the surface completely cools, wax it as described in the waxing section.
- f) Best practice: Use hot wipe on new or really dirty / neglected surfaces, or at the beginning of the season. **TIP:** if you are getting odd dirty scuffs across your surfaces and / or scuffs across the top side graphics, check you transportation equipment. Some external carriers punish equipment, leaving visible scars after only a few miles. Cleaning the hold-down clamps of such equipment will barely help. One way to eliminate such scuff damage is to wrap the clamps with clean shop towels secured by twist wrap or Velcro.

Edge Tuning Procedure

Tune edges when dull, burred (could be after each session!), rusted, or new (never tuned). I most commonly set a 1-degree base bevel and an 89-degree side angle. Note that the two angles should add up to 90 degrees for a good, sharp, strong edge.

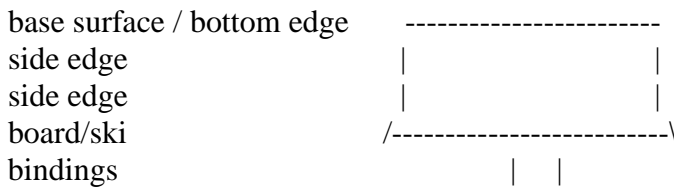
- 1) Determine existing base and side edge bevels (written as 'base bevel: side bevel', in degrees). It is best to deburr / sharpen dry edges for a good metal-to-metal contact between the edge and the tuning tools. This means tuning the edges before

waxing. Doing so also keeps wax from gunking up your tuning tools and smoothes out the base surface-to-metal base edge junction that can prevent or hinder proper wax scraping in this critical region. Be sure to deburr with diamond or carbide stones as other materials are not hard enough to deal with impacted steel.

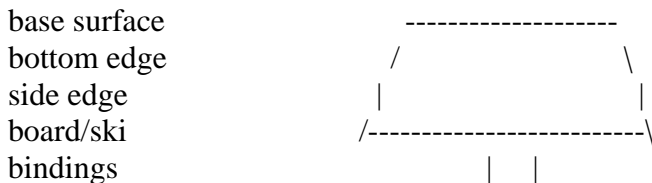
- 2) Position the board / ski binding side down, flat, as if to wax it.
- 3) Check edges for burrs, filing down any found with diamond or carbide stones. Burred edges can cause the board to vibrate during riding, and/or cause the board to drift around rather than lay a nice carve in the snow.
- 4) (Optional: setting base edge bevel) With burrs removed that could hang up the edge tuning tool, coat the effective edge (e.g. the edge used in turning, not the front / rear edges of the snowboard, which are just bumpers) with a magic marker so you can see the edge better. Run the tuning (coarse sharpening) tool (Swix TA3002 or equiv) tip-to-tail with overlapping strokes to install or recondition a 0.5 or 1 degree base-to-side edge bevel in the metal edge material, all around. For park junkies, put in a 2 or 3-degree base bevel but advise that turning (especially on ice / packed snow) may not be as tight unless they crank the board a little more than usual to get the higher angle edge to bite in. All this will make turning easier (1 degree base bevel), and significantly reduce caught-edge garage sales (1-3 degree base bevel, see illustration), especially on rails. Helps keep the edge out of your turns until you decide to turn, and rails out of your face.

Personally, I always set the side edge after setting the base bevel edge, so that the two angles come to 90 degrees when added together.

BEFORE:



AFTER:

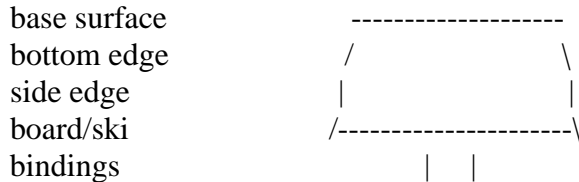


- 5) (Optional: setting side edge) Position snowboard / ski on edge, bindings facing away from you.

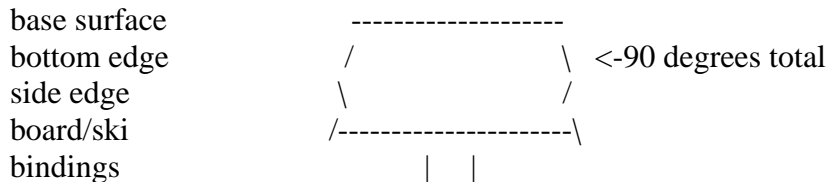
- 6) (Optional: setting side edge) Bevel the side edge inwards to the board / ski by 1 to 3 degrees, depending on the base bevel angle (see illustration, noting that the inward angle is exaggerated in the drawing), or recondition (sharpen) the edge at its existing angle (tool: Swix Edger Pro Sharpener (note: that tool does edge angles only. Does not do base bevel angles) or equiv). If the board / ski sidewall gets in the way, remove some of it by using a sidewall-tuning tool (Swix TA101, SkiMan ErgoRazor, or equiv). Remove only what is necessary to complete the side edge bevel installation / tuning.

As always, work tip-to-tail with overlapping strokes to install / condition the side edge bevel. The side-edge bevel increases the side edge surface area exposed to the snow, increasing bite, stability, and control.

Before (side edge angle 90 degrees):



AFTER (side edge angle 89-87 degrees):



As mentioned, I prefer to set my base bevel and side angles so that they resolve to 90 degrees. So if I put in a 1 degree base bevel, I also put in an 89 degree side angle. For 2-degree base bevel, I put in an 88-degree side angle.

- 7) Polish any sharpening with a diamond file (Swix diamond stone TAA400, 70mm, or equiv), lightly rubbed by hand along the edges.
- 8) Maintain edge sharpness with the Swix diamond stone TAA400, 70mm, or equiv. tool. Such stone deburrs and sharpens.

Base Repairs

- 1) Scrape protrusions away with a metal scraper.
- 2) Clean the base with base cleaner, if required. Dry with alcohol. Make sure the board is completely dry or you might torch it in the next step.

- 3) Melt a stick of P-Tex base filler with a lighter into the damaged surface material until filled. Scrape excess off with a metal or plastic scraper when cooled.
- 4) Brush the repaired area with a stiff nylon brush.
- 5) Perform full tune-up (edges / waxing, in that order) as described earlier.

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