



Ski Preparation

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Base Preparation

New skis should be carefully inspected and prepared before use. Likewise, skis that are in use require daily inspection, maintenance and preparation to ensure maximum performance and quality training or racing. Training skis should always come to the hill with the same care and attention having been given the skis used on race day. Daily attention to bases, edges and waxing are key to improved performance on the hill.

For maximum performance, ski bases and edges should be slightly beveled.

- * Bases should be flat; edges should be beveled**
- * Bases beveled: .5 - 1.0 degrees (1.0 for speed skis)**
- * Side edges: 3 degrees in most cases;**
- * Side edges: 4 - 5 degrees used in extreme slalom conditions**

So called "race stock" skis rarely come from the factory with perfectly flat bases. They are sometimes concave with bases lower than edges (light shines under a true bar placed on the ski base) or convex with bases higher than edges (light shining through along the base edges). Sometimes the base itself is concave or convex in different areas along its length. This is a different condition than the edges being higher than or lower than the base. These conditions, where the base itself is convex or concave, require a good stone grinder to make the base flat. After grinding the bases flat, the base edges must be beveled. Edges that are too high cause the skis to grab, hook, and ski erratically. Beveled edges, beyond the norm, make it difficult for the skier to get to an edge and are best used for side-slipping. I had a brand new pair of "race stock" skis this fall. I discovered the bases had a 1½ to 2 degree bevel. Check your bases at several spots along their base with a true or flat bar and a light source. Better yet, they can be checked more precisely with a laser "bevlguide" tool.



Base grinding and/or base edge beveling should be done by a good technician using a quality stone grinding machine. Very few tuners can do a base bevel as well as a great machine. There are machines that "cut" the base edge (unlike the Montana HTT process) to create the bevel. These "disk" machines do not leave the edge polished as does the Montana HTT; they leave the edge striated (marks from the cutting disk) that will require diamond stone



polishing to remove. These "disk" machines also have some difficulty doing a proper job at the tip and tail radius transitions. The Montana HTT machine will create a base bevel through a high quality polishing process that will require virtually no hand work to finish. In Frisco, Precision Ski is the place to have the work done. They use a high quality, very precise, Montana stone grinder and do the best work I have ever seen. Jimbo, the owner, has been in the business for thirty years and is well know around the country for his expertise. This fall it was not unusual to be in his shop and have reps working with national team athletes bring World Cup skis in to be grounded. They take the time to meticulously do the job correctly right down to frequently redressing the stone.

You will want to work with the technician in deciding the exact structure or pattern you want put into the ski bases. The choice of structure should be based on the snow conditions you expect to encounter. In addition, you will need to give instructions to the technician as to your exact specifications for base and side edge beveling.

Base Bevel Recommendations:

Slalom: .5 -.7 degrees

Giant slalom: .5 - .7 degrees

Super-g skis: 1 degree

Downhill skis: 1 degree

Side edge Bevel (depends somewhat of snow surface soft to icy):

Slalom: 3 degrees

Giant Slalom: 3 degrees

Super-g: 3 degrees

Downhill: 3 degrees

When the skis come off the Montana stone grinder, recheck the skis with a laser "bevlguide" to ensure the base bevel meets your specifications. Once you have your base and side bevels established on the Montana, do not touch the bases other than

cleaning up the nicks on the edges using a diamond stones. Base edges should never be filed (removes material) after the geometry is set. Use Diamond stones; 400, 600, 1000 (do not use 100 or 200 diamond stones) or ceramic stones either white or grey. Using files or aggressive diamond stones on base edge removes material and creates a new base edge bevel that is more than before. If you had a .5 degree base edge bevel, then filed your base edges with even a fine cut file, you remove material and create a bigger degree base edge bevel, sometime way beyond 1 degree. Sometime to the degree that it is virtually impossible to get an edge in the snow even with very sharp edges.

Once the bases have been properly structured and have the desired edge and base bevels, you can do the rest of the work yourself if you have a good set of hands and the time. If not, make arrangements with Coach Emery to complete the necessary tuning too make your ski race or training ready. He does a meticulous job finishing skis. Please remember this: **DO NOT PUT A FILE ON THE BASE EDGES** of your skis once they have been properly stoned and base beveled unless you want to increase the angle of base beveling. The work from this point forward, as well as daily maintenance, can be done with diamond stones unless your skis are neglected and become very dull. If skis get to this poorer condition, it's best is to start again with good stone grind, then reset edge geometry.

Additional Base Preparation

Use an oval bronze brush and brush the bases vigorously with a few strokes to remove any micro fibers. A relatively new brush for base refreshing is the Swix long bristle laser cut stainless steel brush. This does a great job of



refreshing the base, cleaning it up and preparing it to accept wax.) The Swix coarse bronze brush also works here. Next make a few light passes with a sharp plexi scraper. Follow this up using some fiber-tex on a sanding block and making about twenty passes back and forth on the bases. Finish by wiping the bases clean with a clean soft lint free cloth. Commercially, Swix fiberlene, a lint free paper, sometimes referred to as Norwegian toilet paper works very well.

Side Edges

Begin the finish work on your side edges by laying some clear plastic tape over the bases. "Base Tape, which Swix has available, works great and leaves no residue on the base that will



affect wax retention and performance. Run the tape right along the steel edge ensuring the entire base is covered. This protects your bases and base structure while using a side edge bevel on your skis.

Next, with your ski supported, on edge and in a ski vise, use a sidewall planer to take down the plastic sidewall (non-steel edge just above the steel edge). Carefully, use several overlapping strokes of the cutting blade to take off only the plastic sidewall material above the steel edge then wipe away any shavings. Then polish the plastic sidewall with fiber-tex being careful not to run the fiber-tex over the steel edge dulling it.

If your side edges have been set at 3 degrees, begin polishing the side edges of your skis using a 100 grit diamond stone securely placed in a 3 degree file guide or use the appropriate degree tool for your side edge bevel. Before you begin, check the running surface of the guide for any imperfections that

might scratch into the soft base of your skis even though you have covered them with packing tape. Using a liberal amount of water (best applied from a spray bottle to which you can add a little soap) liberate and cool the stone as it passes over the edge. Make several full-length passes over the side edge. After each few passes, wipe the edge clean with a soft cloth and continue. Ten or twelve passes along the edge with the 100 grit stone should do the job. This begins the process of polishing your edge and removing any bur left behind by the stone grinding.

After several passes with the 100 grit diamond stone, change the stone in the file guide replacing it with a 200 grit stone and repeat the process. Remember to use a liberal amount of water and wipe the edge after every few strokes of the diamond stone.

Repeat the process once again using a 400 grit diamond stone in your 3 degree side edge file guide. Make sure this three step process is repeated until you have



polished all four ski edges. A Swix fine ceramic stone (white) should then be used as a final polish on each of the 4 edges. This will hone and highly polish the edge. It will also somewhat harden the edge to increase durability. After each edge has received its final polishing, use a soft gummie stone (grey) to remove the micro burr along the base edge. This edge burr, created by sharpening the edges on both surfaces, feels razor sharp (and it is). However this micro burr edge (even though it is extremely sharp) is not at all durable. Use the gummie directly on the sharp edge with light passes tip to tail to "soften the edges (instead of dulling as below) use back and forth motion with gummie at tips and tails.

Next you will probably want to dull the tips and tails of each

edge with your 100 grit stone. How much edge is dulled is a matter of personal preference. Some like a ski sharp from tip to tail. Others prefer to dull the edge back just a little to where snow contact is made with the ski. Start with minimum of dulling and try the skis. Less dulling is better initially until you know what works best for your skiing.

Cleaning Bases

Using a "hot scrape" method you are ready to clean your ski bases. Begin by removing the base tape you placed on the bases to protect them during side edge polishing. Begin by placing some tape along the side walls so no wax drips on the bindings during waxing. Using a course bronze brush or the long bristle laser cut stainless steel brush, brush the ski bases vigorously from tip to tail. Next, use a sharp plexi scraper and make a few light strokes from tip to tail followed by a good wipe with some fiber-tex.

Use Swix BP 99 or CH10 or a similar wax for hot scraping. Begin your waxing by rubbing some wax on the base of the ski from tail to tip. Now, with your wax iron set at 120 degrees, drip a liberal amount of wax along the base of the ski. Iron in the wax ensuring you keep the iron moving on the base and immediately scrape the ski lightly with a sharp plexi scraper. With the wax



removed, I personally like to repeat this process a second time, waxing and scraping. Sometime doing this 4-7 times will really clean and refresh the base; especially for those favorite speed skis that seem to be slowing down. Then clean any wax from the steel edges and sidewalls. Brush the bases again with your course bronze brush and make a couple of light passes with your sharp plexi scraper.

You are now ready to apply more wax to the base of the ski using the same method described but with no scraping or brushing following. The skis are now ready for storage, travel, or a trip to the hot box. You can use Swix BP 99, BP 88, or CH10 to saturate the bases. Use Swix MB 77 for the final saturation for black bases.

Hotbox or "Thermal Bag"

You probably do not have a hotbox. A "hot box" is just a heated box, usually warmed with light bulbs, where the skis are kept warm so wax is absorbed into the bases. Note: light bulbs, especially with no air circulation can create some "issues" with the internal structure of skis. It's best to have temperature controlled and variable heat source with excellent circulation. Coach Emery has one and can be a great resource for you. Use of the hotbox is not something that needs to repeat with each waxing.

Base Waxing for training or Racing

After the skis have spent the appropriate amount of time in the hotbox, they are ready to be scraped again and have the wax of the day applied.



With the skis scraped and brushed and using the same process described above, drip wax on the bases. Iron temperature is different for different waxes. Swix wax has the iron temperature listed on package; also on a chart included with each Swix iron and in the Swix Tech manual. It is very important to pay attention to specific iron temperatures, especially when using Swix LF, HF, HFBD and CF in order to insure maximum performance. Wait about five minutes and repeat ironing the base again. If the wax seems thin on the base, drip a little more wax on the base and iron it

out.

For the best results, let the ironed wax cool and set for several hours. Overnight is best. Scrape the bases from tip to tail using light strokes with a sharp plexi scraper. Follow up with a medium bronze brush and a good brushing. Now wipe the base using several strokes with fiber-tex and repeat the brushing this time using the newest technology from Swx which is the blue finish brush. It does a great job of removing the wax from the structure. Repeat the use of the fiber-tex and complete the process by brushing



with a fine nylon brush after which you buff the base one more time with fiber-tex. Strap the skis together with ski straps making sure there is buffer placed between the bases so they don't rub against each other and you're off to the races.

Final Thoughts:

*** Once the base and side edges have been prepared, daily maintenance is going to be key. Don't let the skis go and get so bad they don't perform well. You end up with a major task on your hands to get your skis back to race or training shape.**

*** Training skis should be prepared every time out and kept in race condition at all times. You want to maximize your training with quality runs. You don't want any surprises on race day when skiing on skis that perform differently than those you train on daily.**

If you neglect daily tuning of your skis, you're going to be like a carpenter without a hammer or a car without windshield wipers in a snowstorm - your work is made more difficult! Always touch up your edges using a stone. You rarely should ever have to put a file to your edges.

You can never wax your skis too much. It is important to get your new skis into a hotbox type of element if at all possible to get wax absorbed into your bases. Skis are faster when saturated with soft wax like Swix BP 99, BP 88, CH 10 then MB77. When it's time for race wax, consider Swix LF, HF CF.

If you are waxing your skis but not scraping them, then you're just wasting time, wax and preparation of your bases. If you're not scraping and brushing out your skis, you are just allowing the wax to be pulled right out of the bases and ruining the absorbing capability of your ski base.

For finish waxing, I recommend choosing one brand of wax (system). Swix, is very easy to understand, use and apply. www.swixsport.com has great information and a link to "Swixschool" for video tuning clinics. You can also link to the "wax wizard" for selecting the best wax for conditions.

With regard to learning to use a wax system, prepare your skis daily, keep a training log of what wax you used, what the temperature, humidity and snow structure was on the day you used that wax and how well the wax worked under the specific conditions of that day. This helps serve a good reference source for future waxing.

Finally, all the exotic, expensive brand of waxes in the world will never replace your learning to be a good skier in all conditions and terrain, being able to execute precise clean arcs, good tactics on the race course, and skis with properly set base and edge bevels. To have less you are just blowing in the wind.

Many thanks to Swixsport's Bob Collins and A-Basin Head Coach Ron Emery for their technical advice and comments. Bob has spent a lifetime in the sport of skiing and prepared skis for some of the worlds best ski racers. Ron, besides being the head coach at Arapahoe has been doing specialty hand tuning of race skis for years.