New Ski Preparation
Presentation

Step 1. Tuning Room/Workshop Setup

Tool List: Wax table or workbench, ski vices, anti-slip wall protection, a soft flooring material such as wood, plastic, or rubber, a clean, well-lighted working area and a trashcan or box.

The first step is to find a suitable working environment for ski preparation. This includes, a clean and well-lighted room. You will need a stable wax table or workbench as well as ski vices for starters. I cannot stress enough the importance of good lighting. If you want to do precision work, you must be able to see what you are doing. If the working area has a concrete floor, you will want to place some rubber matting to stand on, as well as to protect the ski tails. If the walls in your working area are slippery, hang some anti-slip material. This will prevent a ski avalanche from occurring.

Step 2. Ski Procurement

Tool List: Ski Equipment

New ski preparation is most easily done without plates or bindings mounted. I highly recommend this strategy, if you have the possibility to do so. Most skis today are delivered with plates and or bindings already mounted. In this case, remove the plates and bindings if time permits to ensure a high quality initial preparation.

Step 3. Scraper Sharpening

Tool List: Flat surface, Sheet of 400 grit sandpaper, and a 90-degree file guide

Check your plastic scraper to ensure it is in perfect condition. Your scraper must be sharp, clean, and scratch free. I would like to demonstrate a technique for sharpening and maintaining your scrapers, which has worked well for me. You will need a 400 grit sheet of sandpaper and a 90-degree file guide. You can substitute a square piece of bar stock aluminum tubing instead of the file guide if you wish. Lay the sandpaper on a flat surface, holding the guide in one hand and the scraper in the other. Continue with a back and forth motion, using downward pressure on the sandpaper and inward pressure towards the file guide. Sand each side of the scraper until there are no more nicks and the scraper is sharp. With the sanding process complete, remove the lip or burr on the scraper's edges using a strong fingernail. Rub or scour the edges of the scraper with your fingernail until the edges of the scraper are smooth.

Step 4. Smooth Aluminum Tails

Tools: Used File

Using an old file, which is no longer suitable for filing edges, remove any scratches or nicks that may have occurred during transport. Also round off the corners of the aluminum tail. This is a quick step, which will help protect your plastic scraper. Later on in the video I will demonstrate how to fully finish off the tails of the skis whether they are plastic or aluminum.

Step 5. Initial Base Cleaning

Tools: Plastic scraper, medium brass or copper brush, wax remover, and a clean cloth or paper towel

If your skis were delivered with a protective plastic shrink-wrap, remove it. Next, check the bases for any wax coating or wax residue. Often times the ski factories will apply a layer of wax to the ski bases prior to packaging and shipping. This wax layer helps to protect the base during transport. The wax is typically applied using a wax buffer and provides nothing more than a protective coating to prevent small scratches and give a visual shine to the base. **If your skis were delivered without any protective wax coating, you can skip this process.**

Ensure your scraper is in good condition. Use the technique I demonstrated in Step 3. Now that you have sharp, clean, and scratch free scraper, start removing the layer of wax. The scraper should be positioned at angle approximately 45 degrees to the base of the ski. Using even pressured passes begin removing the wax. It is important to note that you should not see any black material in the wax scrapings when scraping a graphite base. If this is the case, you are removing base material from the ski as well as the structure. Stop at once, check your scraper for any irregularities, such as a burrs or scratches. If the scraper is in good condition, continue using less pressure while scraping.

While scraping, take special notice to ensure the surface of the base has an even or regular finish. If you notice irregular stripes down the length of the base that range from glossy to a matt finish, you are not applying even pressure during the scraping process or the scraper is in poor condition. I prefer to brush more and scrape less. This lessens the chance for potential damage to the base and or structure. Use a soft to medium brass or copper brush to remove the excess wax from the ski base and from the structure or grind. Remove any remaining wax particles from the base using a clean towel or cloth.

Now apply a generous amount of a wax remover to a clean paper towel and wipe the base and edges of the ski a few times. Make a final pass with a dry and clean paper towel to remove the excess liquid. Any remaining wax remover on the base will evaporate in a few minutes.

Step 6. Choosing the Suitable Base Edge Angle

The base beveling process should start with a decision of which base edge angle you would like to ski on. The decision should be based on some specific factors. These factors include: Ski discipline (AC. SG, GS, and SL) and snow conditions. The less base bevel or angle will give greater edge grip, but is less forgiving and can be more difficult to handle. The opposite can be said with a ski, which has more base bevel. With more base bevel one can expect less edge grip, but a more forgiving feel on the snow.

Determining base edge angle for your skis is personal preference. I can only offer the following recommendations and they are by no means set in stone.

In the racing milieu, base edge angles range from approximately 0.5 to 1.0 degrees depending on the discipline. Slalom and Giant Slalom skis 0.5-0.7 degrees, Super G 0.5 to 0.7 degrees and Downhill 0.7 to 1.0 degrees.

Step 7. Base Edge Angle Control

Tools: A digital or manual base-bevel measuring device.

There are a few tools on the market, which can help in measuring the base edge angle. Using one of these tools, control the factory base edge angle. I have found a tool, which has a digital display to be the most accurate.

If your skis are more flat than you desire, it is possible to increase the base bevel by hand. Please see the recommendations in Step 8 to complete this process.

If you find your skis have more base bevel (angle) than desired, the only option you have, is to flatten your base edge by regrinding them. You must be specific with the ski technician and address your desired angles when regrinding your skis to ensure your wishes are fulfilled.

Step 8. Base Edge Hand Tuning

Tools: Base Bevel Guide, Straight Ski File 20cm in length, Paint Brush, and a Black Marker

When the base edge angle is less than desired, it is possible to correct this using some simple ski hand tools. Using a base bevel guide with the angle of your choice, a straight 20cm file with a medium cut, and a paintbrush you can quickly achieve your desired specification.

The first step will be to find a file from your stock, which is as straight as possible. Many new files have a slight bow or twist when delivered from the producer. Check

the file by looking down the length of the file on both sides. If the file has a slight bow or bend, you will want to use the side of the file with bow towards the base of the ski. If the file is perfectly straight you should be able to use both sides of this file for base beveling. If you determine through your inspection that only one side of the file is usable, make a mark to identify which side you want facing up. Choosing the correct side of the file to use will give you a more consistent and clean cut.

After finding a suitable file and have decided which side is up and which side will be the cutting side, its time to mark the file with black marker. Following the cutting teeth, make marks approximately 1mm apart down the length of the file using a medium width black marker. Each edge should be filed using a new section of file. These marks will be used as a guide to ensure than each filed edge is being cut by a new section of file. This helps in maintaining a consistent depth of cut and edge angle. **When you have found a good file for base beveling, put it on the side and use it only for this purpose.**

Place the file in the guide and use one of your marks on the file with a fixed reference point on the file guide. Do not work the edge past the snow contact point with the base bevel guide, as the file will scratch the base. I will get back to the base beveling extremities of the ski in a little while. Make one pass down the length of the ski using short cutting strokes, stopping occasionally to clean the filings from the base and file with a brush. Light downward pressure should be applied on the file. The file should cut cleanly. Follow up by making one long pass down the length of the ski to knock down any high spots on the edge using the same file section. It is very important not to use too much pressure during this process. You do not want to remove more material than necessary and remember you can always remove more metal, but it is impossible to add metal once it is filed away. Place a black dot above the reference line you just used on the file. This is used to keep track of new and used sections on the file. Take the necessary time needed and control your work using a base-bevel measuring device after every pass you make with the file to ensure consistent and accurate results.

With the desired base edge angle achieved down the running surface area, you can now go back and finish beveling the extremities of the skis. The base bevel guide or machine tuning is not effective in tuning the area of the skis in front of or behind the snow contact point. Begin with a small piece of strong paper towel placed between the base and a 20cm medium cut file wrapped with two to three layers (amount layers depends on desired base bevel) of tape. Making short passes with the file, cut away enough metal to match the angle you set with the base bevel guide previously. Some people prefer a bit more angle in the extremities of this ski. This is a matter of personal preference.

Step 9. Rounding Tips and Tails

Tools: Fine toothed file, dull file for plastic tails, 180, 400, and 1000 grit sand paper

It is now time to round the edges at the tips and tails as well as the ski tail. Using a fine cut file round off the edges at the ski extremities as well as the end of the skis. Rounding an aluminum tail is especially important, as it will save your scrapers from unwanted damage. Plastic tails can be more easily rounded using an old and dull file, as it will cut more evenly. A new file will tend to bite too much and remove more material than needed. Rounding the sharp corners of plastic or metal tails will also provide less friction or drag through the snow in the case of speed ski preparation.

Smooth off the rounded edges and tails using a series of sandpaper. Start with 180 grit, then 400 grit followed up with 1000 grit for a high polished finish.

Step 10. Edge Polishing

Tools: File wrapped in 400 and 1000 grit sand paper

The final step in the base beveling process includes lightly polishing the base edges using sandpaper. I prefer a two-step sanding process, starting with 400 grit sandpaper, followed with 1000 grit. The sandpaper should be tightly wrapped around a file. Place a small piece of strong paper towel between the base and the sandpaper wrapped file. Make 2 passes along the entire base edge length using both grits of sandpaper. The idea is to remove the striations, which were left behind from filing. When polishing, take special care to follow the angle you set with the base bevel guide and only make contact with the metal edges. If you make contact with the base while polishing, you will create unwanted wear to the base.

Text: Step 11. Base Cleanup

TEXT: Tools: Plastic Scraper, brass brush, wax remover, and paper towels

The hand base beveling process can leave small metal filings in the surface of the base. Make a pass or two with a scraper using very light pressure to remove any metal fragments. Next, take an older brass brush, (don't use your best brush for this step, as the skis are very dirty at this point) and make two or three passes from tip to tail to open up the structure. Now, apply wax remover to a paper towel and make 2 passes down the ski length. Follow up using a clean and dry paper towel to remove any excess wax remover. The remaining wax remover will evaporate in a few minutes.

Step 12. Initial Wax Cycle(s)

Tools: Waxing Iron, soft paraffin ski wax, and plastic edge scraper

The skis are now ready for their initial waxing. Wipe the ski down with a clean towel. Set the iron to the proper temperature. Find the temperature recommendation on the packaging of the specific wax you are using. Take into consideration the room temperature you are working in. In a cooler environment you will have to increase the iron temperature and if it is extremely warm you may have to decrease the iron temperature. Using a soft paraffin wax, drip a generous amount of wax onto the base in such a fashion that the iron will not come in direct contact with the base during the first passes you make with the iron. Continue making passes with the iron until the wax is in a liquid form 10 to 15 cm from the end of the iron. Be careful not to overheat the base! If needed, add more wax and continue ironing. The iron should never drag or stick to the base. If this happens, there is a good chance that you burn the base of your skis. When the wax has melted on the ski base as desired, use a plastic edge scraper to remove the soft wax from the edges.

Depending on your needs and time allowance, you can repeat the waxing process a few times to help saturate the bases and remove the micro hairs from the stone grinding process. Before proceeding please see Step 18, which covers scraping and brushing in detail. The additional waxing cycles will give your skis better glide characteristics. In any case, you should conclude the wax cycle process with condition/temperature specific wax.

Step 13. Base Tape/Protection Application

Tools: Plastic scraper, towel, strong plastic tape, and a razor knife

When the final wax application has been applied and cooled to room temperature, you can move on to this protective and time saving step. It may appear to take extra time, which it does initially, but will save a lot of time and a give a higher quality finish in the end. The tape will protect the base when removing sidewall material and performing the initial side filing process.

With the ski laying flat on the vices, make one or two very light passes with a scraper to smooth out any uneven areas on the final wax coating. The idea is only to knock down the high spots, leaving a flat coating of wax on the base. Then wipe the wax coating on the ski with a cotton towel to remove wax scrapings.

Using a durable, heavy gauge plastic tape, tape the bases of the skis in width from the edge, which is at least as wide as your side-filing guide. There is tape available on the market from various wax companies for this specific application. It is also possible to purchase a heavy packing tape from your local hardware store. I prefer to use a tape width, which does not overlap.

Roll out the tape beginning at the tail, with a slight overhang. Place the tape in line between the ski base and the inside of the base edge. Continue rolling the tape out in this fashion until you reach the tip, leaving a slight overhang. Cut the overhanging tape along the edges at the tip and tail using a razor knife.

Step 14. Edge and Sidewall Cleaning

Tool List: Plastic scraper, SOS Tuffy dishwashing pad, wax remover, clean towels or cloths.

After taping the ski bases, it is very important to remove any excess wax from the edges and sidewalls. The edges and sidewalls can be cleaned using a plastic scraper, an SOS Tuffy dishwashing pad, followed by using a towel or cloth, wetted with wax remover. Make two to three passes with the wet towel along the edge and sidewall, followed up with a pass using a clean, dry towel to remove all residual wax material. This cleaning process will help ensure the side filing process is efficient and effective. Files do not cut well when the cutting teeth are clogged with wax.

Step 15. Sidewall Removal

Tool List: Body file, normal ski file, sidewall planer and a Carbide-sidewall cutting tool, 180 and 400 grit sandpaper, sanding block.

It is important to note: That a high quality file will not cut through ABS, phenolic, Ptex, rubber, fiberglass, or titanal layers very effectively. In the extremities of the skis, use a body file to pull all sidewall material back away from the edges. You will need to make many passes to achieve a workable angle as most skis are delivered from the factory at 90 degrees in this area. This process will ensure that you achieve your desired side edge angle at the extremities the skis. Then proceed with a carbide-cutting tool, which can cut away the layer directly next to the edge. Make one or two passes with a sidewall planer, which will cut back and smooth out the sidewall portion of the ski. By removing the excess sidewall material you will help ensure a consistent edge angle along the entire edge length. These tools can catch you by surprise. Work slowly and carefully, as you do not want to create any unwanted damaged. For high precision work set the depth and length of your cutting tools. Count the number of passes you make with each tool and repeat this procedure on each edge of the ski. For extra smooth sidewalls you can sand the sidewalls using 180 and then 400 grit sandpaper wrapped around a short length of bar stock aluminum. When you have system, which works well for you, write it down and use as a reference when preparing new skis in the future, as this will save a lot of time.

STEP 16. Side Edge Filing

Tool List: 10 cm ski file, desired file guide with clamp and a black marker

In the racing milieu, the side edge has a standard angle of 3-degrees, but is not unheard of to use a 5-degree side edge angle in the slalom discipline in extremely icy conditions.

Start by marking the entire width of the edge with a black permanent marker in at least 5 places along the entire edge length. Once the marks have dried, they will help serve as a reference to ensure you are filing the entire width of the edge. When the black marks have disappeared, you should have reached your desired side edge angle.

Use a high quality 10cm ski file and a file guide with a clamp to sharpen your skis. The clamp will help hold the file in position to help maintain a consistent edge angle. Begin filing at either the tip or the tail, making short to medium overlapping strokes to remove the steel. Occasionally brush the filings away from the ski base and file guide using a paintbrush. This will keep metal filings from being driven into the base during the filing process.

Continue filing until the desired angle is achieved. Using the backside of your hands, fingertips, or fingernails check to ensure the edge has a consistent sharpness along the entire length of the edge. When checking for consistency with your fingernail, you want to make sure the same amount of fingernail material is being removed along the entire length of the using the same amount of pressure. Drag you your fingernail backward away from the edge to control the consistency of the edge sharpness.

Step 17. Protective Tape Removal

Tool List:

Beginning at the tail of the ski, grasp the overhanging tape and pull the tape off the ski base moving in the direction of the tip.

Step 18. Wax Removal, Scraping, and Brushing

Tool List: Plastic scraper, soft copper or bronze brush and a clean towel or cloth.

Ensure your scraper is in good condition. Use the technique I demonstrated in Step 3. Now that you have a sharp, clean, and scratch free scraper, start removing the layer of wax. The scraper should be positioned at angle approximately 45 degrees to the base of the ski. Using even pressured passes begin removing the wax. It is important to note that you should not see any black material in the wax scrapings when scraping a graphite base. If this is the case, you are removing base material from the ski as well as the structure. Stop at once, check your scraper for any irregularities, such as a burrs or scratches. If the scraper is in good condition,

continue using less pressure while scraping. The black material in the wax scrapings can also be the result of an iron, which was too hot or the lack of sufficient wax applied during the waxing process.

While scraping, take special notice to ensure the surface of the base has an even or regular finish. If you notice irregular stripes down the length of the base that range from glossy to a matt finish, you are not applying even pressure during the scraping process or the scraper is in poor condition. I prefer to brush more and scrape less. This lessens the chance for potential damage to the base and or structure. Use a soft to medium brass or copper brush to remove the excess wax from the ski base and from the structure or grind. Remove the wax particles from the base using a clean towel or cloth.
(Video clip demonstrating proper scraper and brushing techniques)

STEP 19. Burr Removal and Detuning

Tool List: Fine grit diamond stone, wax remover, paper towel, and rubber/gummi stone

Now that you have achieved your desired edge angle, consistent along the entire edge length you will want to remove the burr or overhanging lip which is left behind as a result of the filing or sharpening process. The burr can be easily removed using a variety of diamond stones. A fine grit diamond stone works best, leaving a sharp but clean edge. Keep the stone clean during use, by using wax remover and a paper towel.

With the diamond stone in hand, start at one end of the ski on the base edge. Find the existing edge angle and pass the stone over the edge. Then proceed to the side edge and pass the stone in the same direction also following the existing edge angle. Repeat this process to attain your desired sharpness. The more passes made, the less sharp the edge becomes.

Detuning the extremities of the ski is the next step. Using a rubber/gummi stone, round off the tip and tail areas. This process should be done at a minimum from the snow contact point in the rear back to the ski tail and from the snow contact in the front to the ski tip. This action will allow the ski to move more freely, easing turn initiation and turn release. The detuning process is dependent on conditions and personal preference.

Step 20. Final Clean and Brush

Tool List: Plastic scraper, Stiff nylon brush and clean towels.

With the sharpening process complete, it is now time for the final clean and brush. Using a clean and burr free plastic scraper, make one pass from tip to tail at a low angle and light pressure. The idea is not to scrape deep into the base, but rather remove and particles or residue that may be stuck to the base from the sharpening

process. Following the light scrape, you will want to make one to two passes with a soft brass or copper brush to remove any remaining wax. Wipe the base and side edges with a clean towel or cloth. Using a stiff nylon brush repeat the above process followed by a final wipe.

Step 21. Top Sheet Cleaning

Tool List: Wax remover and clean paper towels.

With the hard work now behind you, it's time for some cosmetic clean up work and strapping the skis together for transport. Apply wax remover to a clean paper towel, and wipe off the top sheets of the skis. This will remove any residue left behind from the tuning process and ensure your skis are looking their best.
(Video clip demonstrating top sheet cleanup and proper strapping technique)

Step 22. Strap for Transport

Tool List: Ski Straps.

For travel by air or car, it is best to place at least four ski straps between the skis and then tightly wrap them around the skis. When placing the straps between the skis, you want to place one strap at the tip and tail in one direction and a strap in the middle, upside down or in the opposite direction. Position the end of the straps flush with the ski edges, pull, and wrap tightly around the skis. This will ensure the two skis are kept in alignment, preventing unwanted damage to the bases and edges of the skis during transport.

Step 23. Enjoy

It is now time to enjoy the fruits of your labor as a ski tuner.

Step 24. Tip

Keep a clean dry towel on hand so you can wipe down the bases and edges of your skis after training when you return to the ski room. This will prevent rusting of the edges before you start to prepare your skis later in the day.