

# ***SIDECUT***<sup>TM</sup> ***TUNING*** ***WWW.SIDECUT.COM***

## **SIDECUT TUNING INSTRUCTIONS**

Maintaining the condition of your skis and boards is undoubtedly one of the easiest and least expensive ways to improve your on-snow technical ability. In this article you will learn how to tune your equipment effectively and efficiently but do remember these are the basics and with practice and experience you will develop your own tricks with proficiency. This in turn will make skiing and boarding much more enjoyable, safer, easier and give you more confidence, especially if one of your goals is to go faster or perform better on difficult terrain! We often think our equipment works fine, however we may not realize what it feels like to ski and board on properly tuned gear.

***ALWAYS BE IN TUNE. Good luck!***

### **STAGE # 1: Base Preparation**

#### ***Tools needed:***

- Ski Vises (you'll need these for all stages)
- Elastic Band (you'll need these for all stages)
- True Bar (also known as a parallel bar or straight edge)
- 3-6mm sharp plexi scraper
- P-tex candle
- Flat block (can use the flat edge of you file guide or True Bar)
- Sand paper (#120, 150, 220, 400 grit)
- Body File ("the Mini Kahuna")
- Brass Brush
- Protective Glove (most of us at some point slip and therefore this essential to prevent serious injury)

**Step 1:** Scrape your base with a plexi scraper or use a citrus-based wax remover to get rid of any old wax and dirt. (Note: We will cover this stage in more detail prior to waxing).

**Step 2:** Next you'll need to inspect for any gouges in the base from rocks or trees.

**Step 3:** Secure your skis in the vices and use a heavy elastic band to keep your ski brakes out of the way.

**Step 4:** Light your P-tex candle; hold over an old piece of cardboard until you get a smaller blue flame. Drip the P-tex onto the damaged area until it fills slightly above the base. Be sure not to drip any carbon on the base (a large orange flame indicates this), and keep the flame clean by dripping the dirty P-tex onto the cardboard. Let this harden for a couple of minutes.

**Step 5:** Remove the excess P-tex with a sharp scraper as you would scrape wax off. (Metal isn't mandatory but may cut easier). Another and better way is by using the body file to shave the P-tex down so that it is flush with the base. Note: take light passes so that you do not scratch or damage surrounding areas of the base, as these files are very sharp. The WC Body File (part #BFWC) is our best file for this. The racers call it the "**Mini Kahuna**"

**Step 6:** Next remove your ski from the vice and rest it on your shoulder towards a light and place your "true bar" (part #TBWC) on its edge. This is one of your most important instruments because it determines whether your base is convex or concave. Be sure to check along the entire surface. If the "true bar" can be rocked from side to side then the base is "high" or convex. On the snow this may feel as if you cannot get any edge hold making controlled turning difficult, almost like you're skiing on a tennis ball. However, if the base is concave or "railed" you'll see excessive light under the center area of the "true bar". On the snow this may feel as if your ski or board is on rails and guides too strongly, turns poorly, or seems grabby or catchy.

**Step 7:** These conditions may be remedied by wrapping 120-150 grit sand paper around a flat block and using long strokes from tip to tail to remove material until flat. Periodically check your progress with your true bar. You may want to finish with a finer 200-400+ grit paper. In general, finer sandpaper is used when the snow is colder and coarser paper is used when the snow temperature is warmer/wetter.

**Step 8:** When the base is flat always use your brass brush several times to unclog and clean the structure you've created by sanding.

**Note:** if your skis are severely "railed" you may need to flat file first (See Stage #2). Lastly, if your skis or boards base is in extremely poor condition or you are competing it is a good idea to take your skis into a specialty shop and ask for a "base grind" to start you off on the right track. However, be sure to check their work with your "true bar" before leaving the shop. Ask them only to 'flatten the base' so that you can do the Base Edge Prep (Stage #2) by yourself. This is better!

**Coaching Tip:** Not only are skis that are "railed" or "base high" dangerous they may drastically interfere with skill development. This may lead into more and more negative interpretations of how your training and competitions are going. The more control and input you have with your equipment on a day to day basis will not only allow you to feel like you will have less interference from things that are not in your control but you'll also start to see a closer relationship between your performance and the condition of your equipment.

## **Stage # 2: Base Edge Preparation**

***Tools Needed:***

- 250mm WC Sidecut File for: (base filing)
- Diamond Stone and/or Ceramic Stone

- Permanent Felt Pen (optional)
- Base Bevel Tools (0.5, 0.7, 1.0 degrees)

In Step One we learned how to and the importance of base preparation of your skis or boards, not only for safety reasons but also for enhanced skill development. We also mentioned that if your base is severely “railed” (edge high) you might need to flat file first before sanding or grinding (done at a shop). When we ski friction is generated between the base and the snow, which in turn leaves us with this “railed” condition if your base is left un-waxed for long periods. Even brand new equipment may come edge high and therefore flat filing will need to be completed before your first day on the snow to prevent frustration. (Check with “true bar” or “parallel bar”).

Depending on snow conditions and individual preferences, skis and boards may be sharpened differently. Generally speaking a 0.5 to 1.0 degree base edge bevel is most common. The current trend is as follows: **0.5-0.7 degrees** – for all Slalom skis. **0.5-1.0 degrees** – or all GS/SG skis.

**Notes:** A 1.0-degree base bevel at the front of the ski (10-25cm) allows the ski to “Smear” or “slide” or “steer” the top part of the turn easier (allows the skis to pivot with ease especially on steep terrain or in a tight GS course where ‘pure carving is not achievable’). This will eliminate the “grabby” feeling thereby making your turns much easier if ‘steering’ is required. Start by trying 0.5 degree bevel on all of your skis and increase as desired. **REMEMBER:** you can always increase base bevel but you **CANNOT** decrease it without regrinding/flattening your base. A 0.5-degree base bevel is more aggressive which means that the skis do not steer/pivot/slide as easily as a 1.0-degree base bevel.

**Step 1:** Remove any burrs (by hand or by base bevel tool) with your diamond stone to make flat filing easier.

**Step 2:** Mark your edges with the permanent felt tip marker to enable you to see how much base edge you are removing (optional- mostly for new tuners).

**Step 3:** Insert WC Base File (side file may be used as well – shown below) into the Base Bevel



Tool and place rubber band over file (optional).

**Step 4:** Lay the file across the base as shown above so that it is slightly less than perpendicular and/or up to 45 degrees to the edge. Now begin pulling the file towards you with long **easy** passes letting the file do the cutting. If you’re right handed – place your right hand on the handle (where the hole is) and with your left hand place your fore finger and thumb on the top of the base bevel guide to add support. Remove the entire black marker as evenly as possible and do one edge at a time (optional) OR until the

entire width and length of the edge is consistently 'shiny'. **Notes:** if your base(s) maintain their flatness from frequent waxing and providing you don't do any rock damage you will **not** need to flat file every time you sharpen or side file your skis! Once you are satisfied with you base bevel you leave it and you maintain the skis/boards sharpness by side filing (see Stage #3) Always base bevel the edge furthest from you = you WILL need to file from tip to tail on edge, then flip the ski/board around and file from tail to tip. THIS IS CORRECT!

**Coaching Tip:** Our bodies use approx. 2L of H<sub>2</sub>O/day for normal bodily function. When we exercise, particularly at altitude (1200m +) several responses such as increased ventilation and heart rate occur within the body. This means we need to increase our fluid intake to prevent dehydration and in turn an involuntary decrease in work capacity. A 2% decrease in weight caused by fluid loss can lower physical performance by as much as 20%. Drink as much as 4 to 6 liters of fluid/day if you are training or working hard at altitude. Drinking prior, during and after training or working on the mountain will aid in the prevention of environmental effects and as a result enhance skiing performance. Alcohol and caffeine contribute to dehydration and therefore are not included in your daily fluid intake.

### **Stage # 3: Side Edge Preparation**

**Tools Needed:**

- SIDECUT Diamond Stone and Ceramic Stones (200, 400, or 600grit)
- Gummy Stone
- SIDECUT Side-Wall Removal Tool or Sidewall Adapter Kit
- WC European Side File (120mm or 100mm – Avail Cut 0, Cut 1, Cut 2)
- File guide - 1,2,3 or 4 degrees
- Spring clamp

When we “carve” on our skis and boards there is one contact point between skier and the snow - our edge(s). To attain optimal balance on an edged ski or board it is crucial that our edges be consistently and accurately sharp throughout its entire length. This makes “committing” to the ski or board much easier on harder and faster types of terrain as well as making the ski respond better on easier terrain. This increased sense of “trust” in your equipment will have a definite link to speeding up your learning progression, and make it that much easier to bridge the gaps between you and your on-snow goals.

To attain the utmost accuracy and consistency when side edge tuning it is necessary to have a “file guide”. The most common file guides range in bevel from 1-4 degrees. Determining the right degree of side bevel varies greatly from personal preference to your ability level. For example a very skilled border or skier who can create a large amount of edge angle throughout a turn may notice an improved edge hold on hard-packed conditions with an increased degree of edge bevel. 3, 4 and even 5-degree side bevels are quite common these days particularly on Slalom skis. (*i.e. 0.5 degree base bevel and 4 degree side bevel is very common at the higher levels*).

**Step 1:** With your ski on its side in the vise (base facing away from you) remove all burrs with your Sidecut Diamond Stone (part #DSWC200/400). This is necessary to increase

the life of your files too as burrs will damage the teeth of your files but not the damage the Diamond Stone!

**Step 2:** With your Body File or Side-Wall Removal Tool (part # ST) remove some of the sidewall (right beside the edge). Proper side filing can be performed only when sidewall is removed!

**Step 3:** Place your file on top of the file guide (choose a 1 or 2 degree file guide when starting out) and secure with the spring clamp. Pull the file guide towards you with long even passes ensuring that the filings are always shooting out towards your stomach. The rule of thumb is that your edges should be consistently sharp and smooth. Finish by placing the diamond stone and/or ceramic stone on the file guide (part #DSWC600, part #CSWC) so you don't change the bevel. This will remove any small burrs from filing and to polish the edges ensuring they are extremely smooth, clean and sharp. Maintaining sharpness is easiest when this step is done frequently - simply carry your file guide, file or stone and clamp with you.

**Troubleshooting:** *If the file seems to slip, skip or nothing is happening, it is due to excessive sidewall, burrs or a loaded file.*

**Solutions:** *Use body file or sidewall tool to remove more sidewall, remove burrs with the diamond stone or clean the file with the file card.*

**Step 4:** Remove microscopic burr with your gummy (part # GS/GSF) on the apex of the edge. Run the gummy from tip to tail light just once or twice. This will not take sharpness away if done lightly and will make the ski less aggressive. Next, de-tune your tips and/or tails (optional) with your gummy stone (part #GS/GSF). **Note:** 2-4 light-medium passes is enough. This will make the initiation and completion of "steered" turns easier. The amount to de-tuning depends on your equipment, skill level and personal preference.

#### TUNING DEGREES - Standards

SKILL	ENTRY	ENTRY	K1/K2	K1/K2	FIS/WC	FIS/WC
	<i>starting</i> BASE (edge)	<i>starting</i> SIDE	<i>high</i> BASE (edge)	<i>high</i> SIDE	<i>elite</i> BASE (edge)	<i>elite</i> SIDE
<b>SL</b>	0.7-1.0	2.0	0.5 - 0.7	2.0 - 3.0	0.3/0.5	3-4 (5) WC
<b>GS</b>	0.7-1.0	2.0	0.5 - 1.0	2.0 - 3.0	0.3/0.5	3short legs/4long legs
<b>SG</b>	N/A	N/A	1.0	2.0 - 3.0	0.5Men/1.0Ladies	3.0
<b>DH</b>	N/A	N/A	1.0	3.0	1.0	3.0
<b>FREERIDE</b>	0.7-1.0	1.0 - 2.0	0.7 - 1.0	2.0	0.5 - 1.0	2.0 - 3.0

**Coaching Tip:** The main implications affecting an un-acclimatized skier/border at altitude are; the rate at which energy is produced aerobically is reduced as well as the ability to tolerate lactic acid resulting from the intense efforts. Here is a simple strategy for arriving to an altitude that is higher than you are used to:

- Take the first day off if you have plenty of time
- Consume increased amounts of water to offset dehydration - 4-6 liters
- Take the first couple of days easier - lower the intensity of your work at altitude (1200M+)
- Get extra sleep on the first few days by going to bed earlier rather than sleeping in
- Do mentally stimulating activities to prevent boredom while not boarding or skiing!

## **Stage # 4: Cleaning**

### ***Tools Needed:***

- Brass Brush
- Nylon Brush
- Scraper
- Fiberlene or clean cloth (optional)
- Fibertex
- Wax (low temp. hydrocarbon is best)
- Waxing Iron (with out holes is best)

Now that your skis and boards are flat, structured and sharp they need to be thoroughly cleaned due to all of the handling, filings and impurities left in the base. Cleaning the base and its structure can be more important than choosing the exact wax for optimal gliding characteristics. Whether you chose to sand the base with a flat block or had it ground by a specialty shop it is important to remove the dirt out of the ‘peaks and valleys’ that were created from either process.

**Step 1:** The best way to clean the base is to wax it and then immediately scrape it - known as “Hot Scraping”. This draws out the impurities that may be in the base. Repeat 2-3 times or stop when there is no longer any dirt in the wax that you are removing. An alternate way, which is cheaper and more efficient, is to use a “citrus based wax remover” (environmentally friendly). Keep in mind however, that this method will make your base extremely dry and therefore is most often used only when the base is extremely soiled i.e. springtime conditions.

**Step 2:** Use your brass brush (nylon brush can be used as well – part # WCBB/WCNB) to thoroughly remove wax from the “structure” in the base after scraping.

**Step 3:** Remove tiny wax particles left over from brushing with a clean dry cloth or “Fiberlene” (optional)

**Coaching Tips:** Make incremental improvements: Make your daily on-snow goals small so they are measurable and attainable. We tend to set vague, long-term goals hoping to reach them, yet we end up spending too much time wishing and not enough time doing. Remember: constantly building on and accomplishing small goals first, will eventually lead to achieving your larger, long term goals. Once in while challenge yourself by doing something extremely hard first and even slightly out of your comfort zone!

## **Step # 5: Waxing**

### ***Tools Needed:***

- Wax
- Iron
- Scraper
- Nylon Brush
- Horsehair Brush
- “Fiberlene” or clean cloth

- Ski straps

Choosing wax depends on whether or not you are competing or how fast you want the skis to run. Purchasing wax nowadays can be rather confusing. To help make it a little easier for you here are 3 main categories for the types of waxes and some of their characteristics:

- **Hydrocarbon waxes:** are typically the least expensive and fine for all-round skiing and boarding and are great for the “hot scraping” method of base cleaning. Best to buy in bulk.
- **Low Fluorinated Waxes:** Work well in all conditions and are more expensive than the Hydrocarbon waxes. Good for those who enjoy recreational racing and training.
- **High Fluorinated Waxes:** These are the fastest, work the best in certain conditions and are the most expensive. Used mostly by those who are involved in competition.

**Step 1:** Choose the type of wax that best describes your needs. Once you have done this you may need to consider the following depending which wax brand you have chosen: air temperature, snow temperature, humidity, snow type and cloud cover. Every wax company has its own directions included which range in complexity based on your specific use. For those just starting out the most important thing to remember is to wax frequently to prevent the “wearing” of your base due to friction. It will definitely make the sport more enjoyable and save you much energy.

**Step 2:** Preheat iron and touch wax to the base of it and allow dripping along the entire base.

**Step 3:** Use the iron to melt to the wax into the base making sure the iron is always moving (if the wax smokes decrease the temperature of the iron). Keep working the wax into the base until the underside of the tip and tail become warm to touch. If the base becomes dry melt more wax onto it. Allow a cooling time of at least 20 minutes (overnight is better).

**Step 4:** Scrape excess wax from base and edges.

**Step 5:** Remove the remainder of the wax from the structure with your nylon and/or horsehair brush. The finish on your skis or board should appear shiny upon completion. To protect the work you’ve done you’ll need to strap the skis together. If you are traveling it is best to put your skis or board in a protective bag.

We sincerely believe these 5 stages of ski tuning will help you to enjoy your sports more! And remember a ski/board teacher or race coach can only help you so much if your tools aren’t in optimal condition. Therefore, if you want to get much more value out of your ski lessons or race camps, or competitions, learn to do most or better, all of your ski maintenance by yourself. With practice you will soon develop a “feel” for tuning and realize what a difference it makes in your skiing and boarding. Enjoy!

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