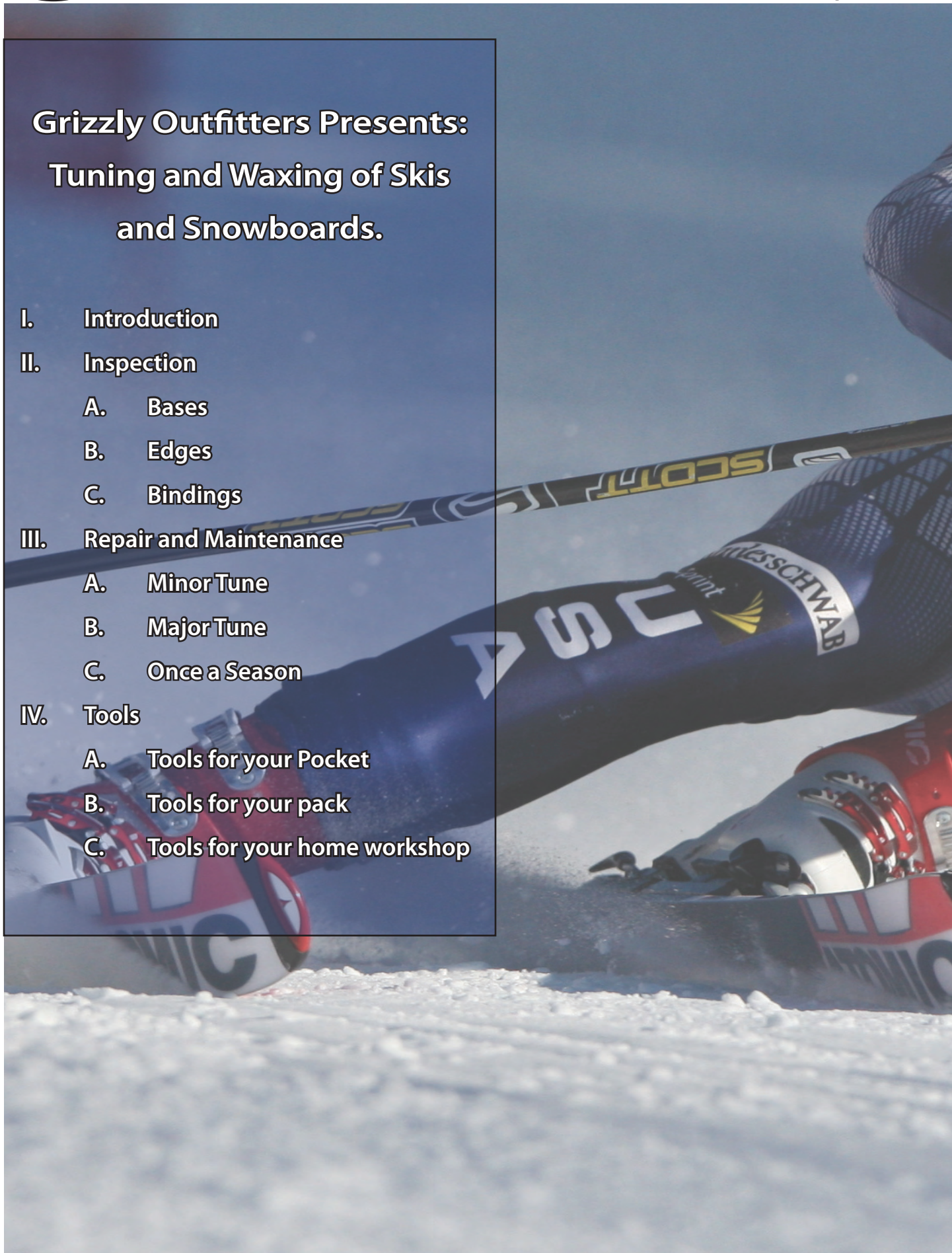


Grizzly Outfitters Presents: Tuning and Waxing of Skis and Snowboards.

- I. Introduction
- II. Inspection
 - A. Bases
 - B. Edges
 - C. Bindings
- III. Repair and Maintenance
 - A. Minor Tune
 - B. Major Tune
 - C. Once a Season
- IV. Tools
 - A. Tools for your Pocket
 - B. Tools for your pack
 - C. Tools for your home workshop



I. Introduction

Most skiers don't care if their ski or snowboard is tuned and waxed, and think that it is easier to replace equipment every few years. The fact is, simply waxing your skis or board will put you light years in performance ahead of most other riders. A waxed and tuned ski or board will always outperform a dry one. A maintained ski will last longer and be more durable. Does your car run well without motor oil? Wax is almost as necessary to skis as motor oil is to your car.

Like most things, the more practice you have tuning and waxing, the better and more efficient you will become. Use the same protocol on both skis every time to make tuning consistent. Some tasks are best left to a full service shop. You must decide how much time and expense you are willing to commit, and when to defer to the shop.

In order for skis or snowboard to work properly, it must be free of base damage and be flat from edge to edge. In this clinic we will guide you through the steps of inspection, repair, maintenance and waxing. We will show you the tools that are necessary, and try to point out what repairs are beyond the scope of the home technician.

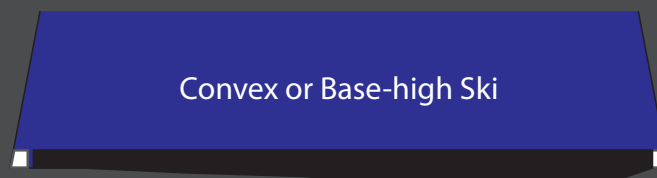
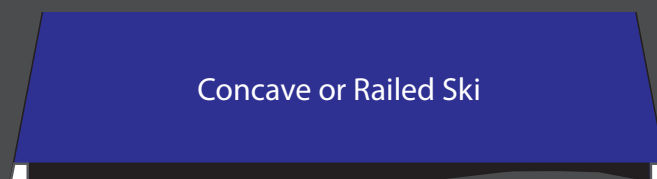
II. Inspection

It is a good idea to inspect your skis or snowboard every day prior to hitting the slopes. I recommend the night before, so there is time to attend to any major damages.

In order to properly tune a ski or snowboard, one has to know what the goal is. For both skis and snowboards, the goal is to be perfectly flat from edge to edge.

In the diagram below, you see an exaggeration of a railed ski, a convex or base-high ski and a flat ski. A railed (or concave) ski is more common than a convex one, but occasionally skis can come from the factory base-high. Being able to spot these deviations from flat is half the battle.

By using a true bar, a very precisely machined



straight edge, a ski technician can quickly determine whether a ski is flat or not. A metal ruler



or carpenter's square could be used in a pinch. Hold the ski up to the light and look for daylight. Light showing through in the middle of the ski

or snowboard indicates concavity, while light showing on the edges a convexity.

If the ski or board is flat, continue the inspection of the bases for gouges and scratches. Large, deep gouges, also known as core-shots, may require professional treatment. Smaller gouges can be repaired with ptex candles.

If they are not flat, a trip to a ski shop with a stone-grinder may be necessary. It is possible to get a ski or board flat using hand tools, but it can be very laborious, and in some instances a complete exercise in futility. Some expertise is required to determine how "out-of-flat" the ski or board is, and if it will require the removal of too much material to get usable results. Once flat, the rest of the tuning process can be done by hand with great results.

Another step in the tuning process that is difficult for the home technician to perform is texturing the bases. We will discuss this in more detail later.

It is a good idea to inspect your edges for damage from rocks, or in the worst case, a compression from rock impact. Look for cracks in the edge, or for areas of separation between the edge and sidewall of the ski or board. Run your fingers along the edges. Be careful not to get metal shards in your fingers. If the edges feel rough, make note. If damage is found, be sure to seal the sidewall or bring it to a shop for more extensive repair. Also, inspect your bindings for signs of stress or cracks. Make sure that the Anti Friction Devices (AFD) - the little plates usually located on the toe piece - are not missing or cracked. These plates provide a slippery surface for the ski boot to interface with the binding. If they are gone, the bindings won't

function properly.

After a thorough inspection, the technician will know how much base repair will be required and what attention may be required by a ski shop with the proper tools. Knowing what you are up against is half the battle.

III. Repair and Maintenance

A. Minor Tune Up

After an inspection, all that may be required is a quick tune. The steps for a quick tune-up are:

1. De bur edges using a de burring stone.
2. De tune.
3. Clean the bases.
4. Hot wax and scrape.

Since these are all steps of a major tune, we will proceed to that. Keep in mind that a very minor tune may be a simple de bur performed in the parking lot or after a particularly rocky run. For this reason, I always carry a de burring stone in my pocket.

B. Major Tune Up

The steps to a major tune up are as follows:

1. De bur edges using a de burring stone.
2. Fill minor gouges with ptex.
3. Scrape excess ptex with metal scraper.
4. Flat file and bevel base edge using file.
5. File and bevel side edge with file.
6. De tune.
7. Clean the bases. Use hot scrapes.
8. Hot wax with iron and scrape with plastic scraper.
9. Polish with brush.

1. De burring

Using a small de burring stone, remove burs from edges. Always go from tip to tail. This step is necessary before filing to remove work-hardened steel caused by hitting rocks. If you skip this step,



your expensive files will be garbage in no time. Not a bad idea to wear gloves to do this step, particularly if your edges are in bad shape. Wipe down your skis or snowboard with a rag after de burring to remove and metal filings that may be lingering. These may get working into the bases and be difficult to remove later.

2. Fill Gouges.

It may be a good idea to wear gloves for this step too, as ptex burns are not fun. You will find out the hard way

why we used to refer to ptex as napalm. Work from tip to tail filling minor gouges. A note here. DO NOT fill core shots with ptex. A



gouge going through the base into the core of the ski requires a base weld. Dripping ptex will only make the repair more difficult. If you have to wait to have a core shot repaired correctly, trim the

edges of the damaged area with a utility knife and fill the gouge with wax during the waxing stage. This is a short-term fix, but will keep water from penetrating into the core of the ski. I would not recommend waiting more than a few days before getting a proper repair.

3. Scrape with a metal scraper.

Scrape from tip to tail with a sharp metal scraper. I prefer the thicker ones that tend to flex less. Use



an old file to sharpen scrapers - it is best to run the scraper over the file to maintain a perfectly flat surface on your scraper. I will note here that a sharp metal scraper can be used to flatten a base-high ski. Do this only in a very limited capacity, or you can make a mess.

4. Flat filing base edges.

File from tip to tail trying not to flex the file. If a base bevel is desired, wrap the file with some tape

or use a bevel guide. Files are designed to be used in one direction only and they need to be sharp to



work properly. Tip: run a sharpie the entire length of the edge prior to filing. By doing so, one can see how much material is being removed.

5. File and bevel side edge with file.

File from tip to tail and work in long, smooth strokes. Although one can get by with tape instead of

bevel guides for the base edge, the side edge needs an accurate bevel guide. For Montana's skiing



conditions, you rarely need a more acute angle than 90 degrees. If you used a 1 degree base bevel, then a 1 degree side bevel is customary. Some racers may use 2 of 3 degrees side bevel for icy conditions - usually not necessary around Montana.

6. De Tune

An edge that is left razor sharp after filing will be almost unskiable. De tuning is the process of removing the harsh razor edge. First, use a file to round the tips and tails. From the contact point with the snow forward to the tip and from the

contact point rearward to the tail. Then use a soft stone to smooth the tips and tails where you just



filed. Use the same soft stone to taper the edge. Begin at the front of the binding and taper to the tip. Then, work from the heel of the binding and taper to the tail. Smooth the edges slightly under foot. The goal is to have the edges the sharpest under foot and tapering in sharpness to the tip and tail. These are general rules of thumb. Try different techniques and see what works well for you.

7. Clean the bases. Use hot scrapes.

Wipe the ski down with a rag and base cleaner. Next, perform a series of hot scrapes. This is done by melting an inexpensive, soft wax onto the base



of the ski. Then, using an iron, heat the base of the ski and the wax until the wax stays in a liquid state for several seconds after the iron has past. DO NOT let the wax heat to the point where it smokes. While the wax is still liquid, scrape is off. Do this a few times until the molten wax is free of impurities.

8. Hot wax with iron and scrape with plastic scraper.

Just like a hot scrape, only use a wax for the current snow conditions and let is cool before scraping. Set the skis outside or let them sit for 20 minutes before scraping. If you leave them somewhere warm (around 100 degrees Fahrenheit) overnight, the wax will penetrate the bases and be very fast.

9. Polish with brush.

Use a soft brush of nylon or horsehair to polish the bases after scraping. Tip to tail.



Tuning supplies to have in your pocket:

| Item | |
|--------------------------|--|
| De burring Stone | |
| Chunk of wax or wipe on. | |

Tuning Supplies to have in your pack

| Item | |
|-----------------------|--|
| Gummi Stone | Nice compliment to a standard de burring stone. |
| Variety Pack Of Waxes | Wider variety to match the snow conditions. Kick wax is nice for long back country approaches. |
| Rubber Bands | For holding ski brakes. |

Nice to Have Tuning Supplies for the Home Technician

| Item | |
|---------------|---|
| True Bar | |
| Ski Vices | Get a good one |
| Waxing Iron | Get a good one. |
| Files | Chrome are the best. |
| File Guides | Both base and side edges. |
| Diamond Files | For finish work. |
| Wax | Selection to match different snow conditions. |
| Brushes | For buffing bases. |
| Fibertex pads | Finish work on bases. |
| P tex | Clear and Black. |
| Gummi stone | De tuning |
| Soft Stone | Prep skis for filing |