

SKATE SKI TIRE WEAR

Take a look at your skate skis. If the rear wheels are wearing much faster than the front wheels, we urge you to read the rest of this article. Having worked with many roller skiers, from World Champions to novice skiers, we know that technique and binding placement are the most important factors in tire wear on skate skis. Of course the weight of the skier also makes a difference.

Jim Galanes, former US Ski Team member and for many years a coach, said he long ago discovered that binding placement and technique are the most important factors in wheel wear on skate skis. Jim has the skiers stand with a scale under the rear wheel and he mounts the bindings so the load on the front wheel is just slightly less than the load on the rear wheel. This puts the bindings quite far forward.

We were in Europe to visit Ferry Grill, our Austrian / German distributor. We were also meeting with the Russian, German and Austrian national teams. At the time these teams were using V2-900 for classic and V2-800 for skating. We inspected many skate roller skis and were surprised to see how many skis had uniform wear between the front and rear wheels and also noticed that most of the skiers had their bindings mounted further forward than we would normally recommend.

There are many different techniques for skating. I classify skaters into two broad categories, "heel pushers" and "toe pushers". There has been a lot of misinformation regarding the skate push off. Although the whole foot is in contact with the ski, the main pressure point for elite skiers is the ball of the foot. Good skiers lean out over the ski and they use their poles and upper body for propulsion. Many "heel pushers" are more upright, they don't get out over the front of the ski and they don't use their poles properly for propulsion. Also they often use ski poles that are too long. A "heel pusher", with the bindings mounted too far back, can develop a load on the rear wheel that is over 100 pounds more than an elite skier.

In the mid 90's, Chris Klein was testing 800 series skate wheels for us and he was able to ski over 100 hours on a set of wheels. Chris is a big guy, over six feet tall. While Chris was testing in Vermont, a top bicycle racer came to us to buy 800 series skate roller skis. Brett Rutledge, who weighs about 155 pounds, had started cross country ski racing and he wanted to be a better ski racer. Within two weeks he called us and said he had worn out the tires. He said they only lasted 12 hours.

We asked him to stop by so we could watch him ski. When Brett showed up we went to a road nearby that has a moderate hill and asked him to ski up the hill. Brett, being a strong bicycle racer, was all legs with little upper body propulsion. All his weight was on the rear wheels, he was a model "heel pusher". We set Brett up with a good ski instructor and soon the same tires lasted about 35 hours. Brett's technique continued to improve and the tires that originally lasted only 12 hours now last about 85 hours. This is the best example we have on how technique affects tire wear.

World and Olympic Champion, Vladimir Smirnov, weighs 184 pounds and roller skied about 14 hours a week. Because of his smooth technique the tires on his skis lasted much longer than many less proficient skiers that weighed only 150 pounds. Studies show that when pushing off you can generate a force up to 2.5 times the skiers weight. A "heel pusher", with the bindings mounted too far back, will have about 80% of the force on the rear wheel, an elite skier with properly mounted bindings about 55%. Using this formula we get the following data comparing a 180 pound good skier, with bindings properly mounted, to a 180 pound "heel pusher" with improperly mounted bindings.

$180 \times 80\% = 144$ pounds $\times 2.5 = 360$ pounds. 180 pounds $\times 55\% = 99$ pounds $\times 2.5 = 247$ pounds. For every push off the "heel pusher" applies 113 pounds more force to the rear wheel. For those who wear wheels rapidly we highly recommend a video analysis of the technique. Using a bathroom scale and an object like a book, so the skis are level, stand on the skis to see the weight distribution between the front and rear wheels. If the weight is highly biased towards the rear wheel, the tires will wear much more rapidly. If they are pneumatic tires the tubes will also be under much greater stress.

RECOMMENDATIONS FOR REDUCING TIRE WEAR

- 1- Move the bindings forward so that when standing upright on the ski, with a flat foot, about 45% of the weight is on the front wheel.
- 2- If you are using very slow wheels try wheels that are somewhat faster
- 3- If they are pneumatic tires, increase the tire pressure.
- 4- If you are using poles that reach your lips, or are above your lips when standing flat on the ground, use shorter poles. If the poles are too long you will ski too upright, putting more weight on the rear wheels.
- 5- Practice pushing off the ball / toe instead of pushing off on the heel.
- 6- Get forward, over the ski instead of skating upright.
- 7- Ride a flatter ski and when skiing up hills don't tip the ski excessively.
- 8- Use the upper body more. Get your poles into the workout.
- 9- Ski on both sides of the crown on the road. Just switching skis will not help much if you are on the same side of the crown of the road.