

SAWMILL FORUM

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Would you be able to provide written instructions on how to swage a saw bit?

I am sure it would be a lot easier for me to show you than to put it in writing, but who ever said life was supposed to be easy? Swaging bits on an inserted tooth circular saw is fairly easy, but there is a certain amount of feel for it that you have to develop that is hard to describe in writing.

Before I get started on how to, let's cover a few basics. The farther back you sharpen any bit the less side clearance you have. That leaves you two options.

1. Once the bits are worn to the point where you no longer have enough side clearance for the saw to work properly, just throw those bits away and replace them with new ones.
2. As the bits wear, swage them to maintain the proper side clearance.

In today's economic climate one might ask why anyone wouldn't want to get as much life as possible out of the bits. The appearance of being thrifty is all well and good, but it is the math that counts when you are trying to save money. In a large production mill, downtime costs are very high. Anytime you are not making lumber is considered downtime. Some of those larger mills change saws when they are dull so that one person can be maintaining one saw while another saw is up and running. In that particular situation I can easily make a case for swaging.

Other large production mills still do their sharpening on the arbor during coffee or lunch breaks. In that situation they have a very limited amount of time to sharpen that saw and get it back to doing what it is supposed to do. Adding the time it takes to properly swage the saw might be just enough to go past break time and incur additional downtime. When you weigh the cost of replacing bits early against the downtime that would be incurred by swaging, it can quickly become more economical to just replace those bits early.

There is another downside to swaging that can also quickly

affect your bank account. As you all know, sharpening the saw improperly will cause many problems and cost you money in rejected lumber, lost production, and saw maintenance costs. Swaging is one more chance to have a similar problem. Even if you are perfectly capable of sharpening the saw accurately, that doesn't mean that your swaging will be just as accurate. And of course, any inaccuracy in swaging will give you the same sort of problems as inaccurate sharpening.

You can be looking at excessive marking of the lumber, not to mention the saw running in or out of the log which will not only spoil what could have been good lumber, but will also cause your saw to need to be hammered sooner instead of later.

If you are new to running a sawmill and/or maintaining the saw, swaging will give you one more possibility of why the saw won't run properly. If your sharpening is good, and your mill is properly maintained to the point where you are having no trouble with it, then you could introduce one more variable with the swaging. If your mill was performing well before the swaging and then after swaging you start to have problems, then at least you know where to look first. But if you really don't have all of your ducks in a row before you start swaging, then swaging will just add one more thing to look at when you are trying to figure out why your mill won't saw properly.

Okay, I have done my best to deter those who should be deterred. Now let's have a primer on how to swage inserted tooth saw bits.

When you look at the bottom of most upset swages, you will see two different holes. The curved indentation is for spreading the tip of the tooth, while the straight indentation is for squaring up the tip of the tooth after spreading.

There are two distinctly different ways you can approach swaging.

1. Only swage when the teeth are at the point where they



Using an upset swage.

- don't have enough side clearance to do the job.
- Swage after every time you sharpen the teeth to maintain original side clearances.

People who are not overly confident about their swaging abilities tend to lean towards option one, while those who are real good at swaging would rather go with option number two. It is ironic that if you wait until the saw won't run properly due to lack of side clearance, you have a much harder task to swage the saw properly than you would if you swaged after each sharpening. When you have a lot of material to move, it is much harder to do an accurate job at it than it would be if you just had to expand the tip by maybe .005".

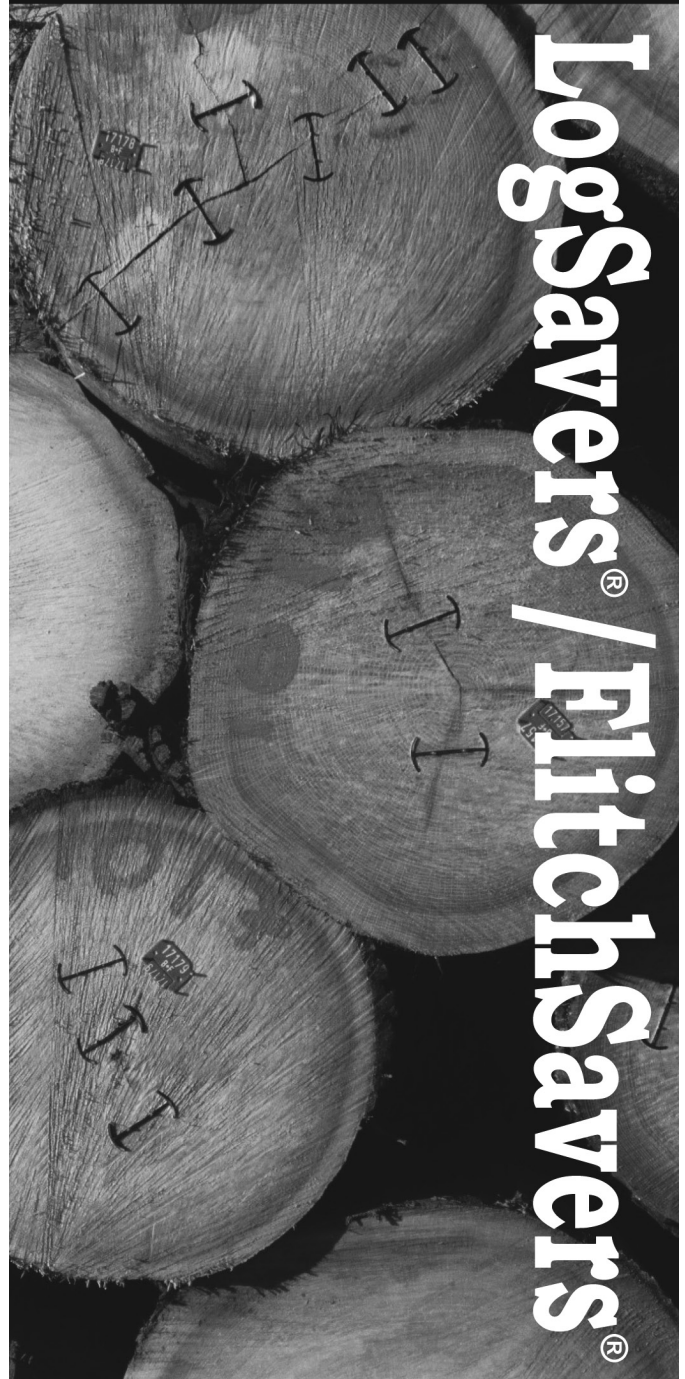
If you stick with option 2, you will only need a very small hammer to hit the swage with. And you only have to tap it a few times as apposed to getting a full size hammer and hauling off and clobbering the swage. Little taps are much easier to control.

How you hold the swage is very important. First, you have to hold it perfectly parallel to the blade. If you tilt the swage to one side or another you will make a corner that is too sharp and as a result will be too aggressive in a lateral direction, meaning that it will not want to saw a straight line.

The next thing is holding the swage at the proper tilt or angle to the tooth. As you rock the swage forward and backward, you will feel it when it hits the sweet spot and feels like it bottoms out on the tooth. If you are off a little on that angle, the tip of the tooth will either be tipped up or tipped down after swaging. That will just be one

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more obstacle to a good running saw. You will find that if you tip the handle too far forward it will tip the edge of the tooth down and if you tip the handle too far back it will tip the edge of the tooth up.

The method I like to use is (using the round indentation first), put the swage on the tooth and while keeping the handle parallel to the body of the saw, rock the handle back and forth until you find the sweet spot. Now slide the swag all the way over to one side while maintaining the parallelism and give it a few light taps with the small hammer. Next slide the swage to the other side of the tooth and give it a few more light taps with the small hammer. Now turn the swage over so that the tooth is contacting the straight indentation and find the sweet spot again. While keeping the swage centered on the tooth, and still maintaining the parallelism with the body of the saw, and also maintaining the proper angle by keeping it in the sweet spot, give it a few light taps to square up the material that you distorted with the curved part of the swage.

Now, here comes the most important part of the process: Put your reading glasses on and inspect the newly shaped tooth. Is the edge tipped up or down? Is the cutting edge sharp, straight, and square to the blade? Do you have the same amount of side clearance on each side and is it the same amount as what you had when the kerf on the new tooth measured 9/32"?

If you swaged a little too much you can always correct that with a hand held file, making sure to stay with the original radial angle and tangential angle. If you tipped the edge up a little you will need to gently file the top of the tooth to correct that situation. If you tipped the edge down, you will have to resharpen and reswage and try to get it right this time.

As you can tell, there are a lot more ways to get the swaging wrong than there are ways to get it right. But if you take your time with it and really concentrate on what you are trying to do, you should be able to develop the skill set needed to swage your saw properly.

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