

# SAWMILL FORUM

CASEY  
CREAMER

SAW  
DOCTOR



**I run my 52" saw at 850 RPM. According to some of your articles in this magazine, that is too fast. I like that speed and I have noticed that when I hit nails and other things in the log I am much less likely to break shoulders or even bits in my saw. What do you think about that?**

It's like driving your four-cylinder car in first gear all the time. It will keep carbon away from your valves, and you will never get a speeding ticket on the highway, but at what cost?

I can understand your contention that your saw is less likely to break shoulders or bits. Of course that's because it's grinding the wood instead of chipping it. Or to put it another way, instead of each tooth taking the appropriate sized bite, your saw is just trying to rub the wood into a board.

So here is what it is costing you to save having to pay for a few welded shoulders and a number of broken bits:

Basically everything that rotates at 850 RPM is rotating too many times per minute, hour, day, week, month and year. And even more important, everything is rotating too many times per board foot sawn. A good speed for your saw would be 8,000 surface feet per minute (SFPM). That calculates out to 588 RPM. At 850 RPM, your 52" saw is turning out 11,565 SFPM. That is roughly 44 percent faster than is necessary to do the job. That means that a large part of your sawing costs per board foot are 44 percent higher than they need to be, just so that you can save the price of a couple of welded shoulders per year.

Your bearings, belts and pulleys are all turning 44 percent more per board foot than they need to, and so is your power plant. Whether electric or diesel, you are using more fuel than you need to produce a board foot. And then there are things like the wear on the bits and the shanks that go well beyond that 44 percent number.

When you have a proper feed and speed relationship, it means that each tooth is taking the proper amount of bite and therefore creating the right size chip. Given the RPM that you are running, you are feeding way too slow in relation to

the saw speed. That is why you think you are saving so much in not breaking bits or shoulders. If you did feed the right amount to keep up with the saw speed you're running, you would be having lots of trouble because the bits would be hitting the wood too hard—pulverizing it instead of making a nice clean chip.

In your case, your feed and speed relationship is so far off that the bits are not attacking the wood hard enough. It's more like they're rubbing their way through the wood. When a saw tooth takes the proper bite and produces a big enough chip, it will wear at a certain rate. When the cutting edge of that bit is trying to grind instead of chip, it will wear the cutting edge that much quicker on top of the 44 percent difference. So you might be wearing the bits out at a rate perhaps 75 percent faster per board foot than you would with a proper saw speed and feed rate.

And it is a similar situation with the shanks. When you make a proper chip, it will go into the gullet and stay there until that gullet exits the cut. When you are making the kind of powder that you must be producing, it is easy for that powdery dust to spill out of the gullet while still in the cut. The more dust you spill, the quicker you wear the edges of the shanks that are so important for clearing material out of the cut. And of course, sawdust spillage will heat the saw and force it off line and create some mis-cut lumber for you.

In reality it doesn't matter what you like, or what you believe in, or how your daddy did it. What matters is the math and how that affects the economics of the whole operation.

I suppose this would be a good example of the old adage "tripping over dollars trying to pick up pennies."

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**Questions about sawmills and their operation should be sent to Forum, The Northern Logger, P.O. Box 69, Old Forge, NY 13420, FAX #315-369-3736.**

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