

BY CASEY CREAMER

## Last month you covered the different saw thicknesses. I plan to order a new saw and I was wondering which pattern is the best?

Which is best will depend entirely on your individual application. And I should add that your choice shouldn't depend on what your favorite mill supply house has in stock and it also should not depend on whatever pattern your grandfather liked best. No one pattern will be the best in every application. One of the reasons I say disregard whatever pattern your grandfather liked best is because there is more than a good chance that your current application is different in a number of ways from whatever your grandfather did with his sawmill.

There are three different inserted tooth circular saw patterns in use today. B, F, and 2½. I didn't list the old #3 pattern because that pattern is for the most part considered to be obsolete no matter how many old #3 pattern saws are still out there. Any application that suited the #3 pattern will work even better with the B pattern.

Whether you primarily saw hardwood or softwood, each one of the three current patterns has its own strengths and weaknesses that are related to other factors aside from which species you are sawing. I would say that the F pattern is the most popular these days. But unfortunately that has nothing to do with what actually might be the best the pattern for a given situation. F pattern saws sell better because that's what is in stock the most at the mill supply houses. The more that a mill supply house sells more F pattern saws, the more they stock more F pattern saws. It has more to do with the mill supply houses stocking more F pattern saws than it does with what is the best choice for a given situation.

Each pattern has a different size gullet. When it comes to choosing which pattern will be best for you there are basically two things to consider. 1. Gullet capacity. 2. Number of teeth in the cut. The larger the gullet capacity, the faster you can

feed the saw in a large depth of cut. The more teeth in the cut at the same time, the less likely the saw is to dodge knots. When it comes to gullet capacity every saw has a minimum and maximum feed rate relative to the depth of cut. If you feed below the minimum feed rate you will be making a chip that is smaller than the side clearance of the teeth and those small chips (more like dust) will spill out of the gullet, heat the saw, and force it off line. Additionally, when you feed below the minimum for any given depth of cut, you are being inefficient in that the teeth are more like grinding the wood than taking good size chips, so that dulls the teeth even quicker and that sawdust spillage will wear the shanks out sooner instead of later, which will of course cause even more sawdust spillage.

Feeding over the maximum feed rate for a given depth of cut will produce obvious negative results. When you overload or plug the gullets, the saw will stall and may even shear the lug pins which will mean that you not only have to replace those pins, but you will also have to have the collars re-machined at that point.

Let's start with the 2½ pattern. If you are primarily sawing small knotty logs, there is nothing better than the 2½ pattern saw. Because the teeth are closer together than any other pattern, this pattern saw is the least likely to dodge knots. But as much as you will love this saw when sawing small knotty logs, as soon as you find yourself in a relatively large depth of cut, you will really start to dislike this saw. If the top of your log is anywhere close to going from 11:00 to 1:00 on your saw, you are in a large depth of cut and that situation is not going to go well if you are running a 2½ pattern saw.

The 2½ has the smallest gullet capacity of the three different patterns. That is not a problem in a small depth of cut. But when

you are in a large depth of cut, each tooth is covering a longer section from when it enters the cut to when it clears the cut. That means that more sawdust will be going into each gullet. The problem is that in this particular pattern, when you are in a large depth of cut, the minimum feed rate actually exceeds the maximum feed rate. That means that the only way to not plug the gullets is to underfeed the saw to the point where you are feeding below minimum and therefore spilling sawdust.

At the other end of the spectrum we have the B pattern. For perspective, I think the B pattern has 2.5 square inches of gullet capacity, with the F pattern having 2 square inches, and the 2½ pattern having only 1.5 square inches of gullet capacity. If you are in a very small depth of cut where the top of your log is maybe going from a little below 10:00 to 2:00, you might find you have maybe one or at best two teeth in the cut at the same time. This is where you will have to worry about the saw having a tendency to dodge knots or hard spots in partially frozen logs. On the other hand, if you are in a large depth of cut, you will find that the B pattern has enough gullet capacity that you should be able to keep up a good feed rate even when your saw is getting close to being buried. Of course, once the saw is buried in the cut, all bets are off. That is an abusive situation for any circular saw. If, for example, you are live sawing or sawing flitches on a regular basis like handle mills do, then that B pattern will be the best choice for you by far.

That brings us to the good old F pattern. In a sense the F pattern is a compromise between the 2½ and the B. I don't really look at it as a compromise as much as I see it as being more of an all-purpose saw. In the smaller depth of cut, it has enough teeth that it should not be dodging knots. While in the larger depth of cut, it has enough gullet capacity that



you shouldn't have to worry too much about plugging the gullets. To sum it up, if you mostly saw small knotty logs, go with the 2½. If you mostly saw large logs and large depth of cut, go with the B. But if you find yourself having to saw all of the above from time to time, the F will be the pattern of choice for you.

Now, just making the right decision on which pattern isn't enough. You also need the right number of teeth for whichever pattern you decide on. If you are way underpowered, you will need to run less than the recommended number of teeth. If you have ample power, running extra teeth won't do you any favors. Just stick with the recommended numbers.

B Pattern 10 to 12 less teeth than the diameter. 56" with 44 or 46 teeth.

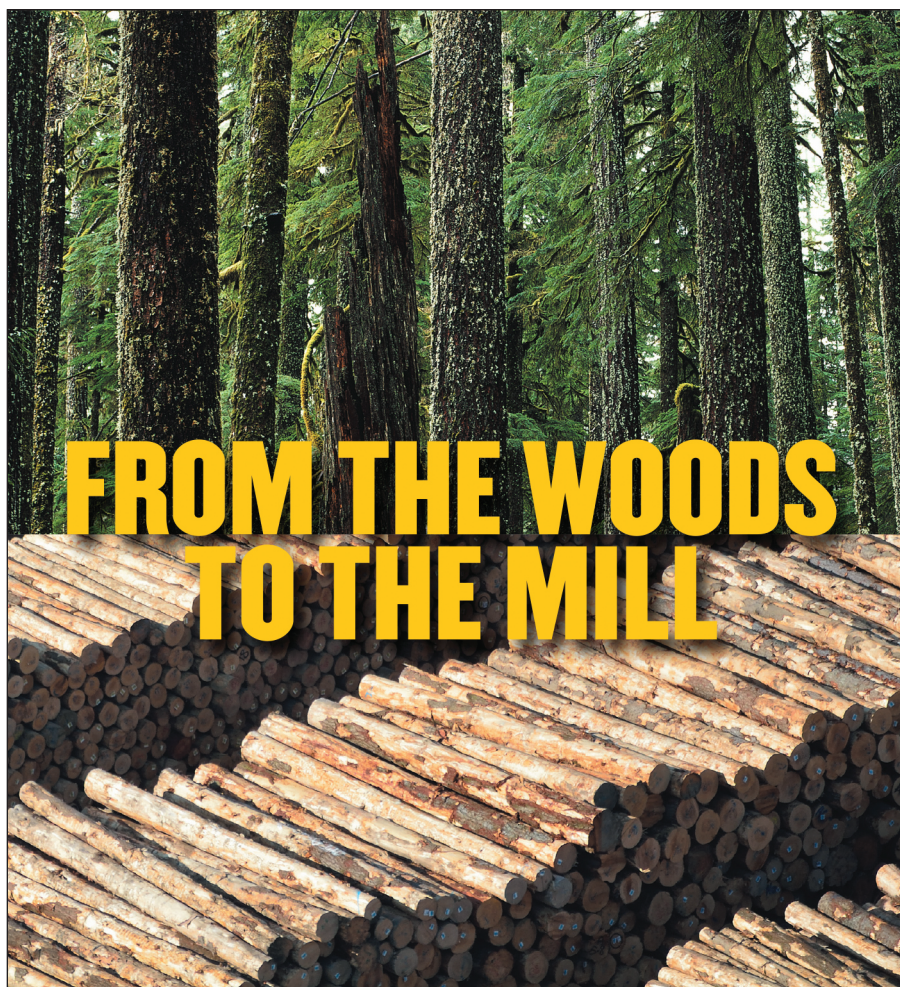
F Pattern 6 to 4 less than the diameter. 56" with 50 or 52 teeth.

2½ Pattern 2 less than the diameter, or same as diameter. 56" with 56 teeth (aka square saw) or 54 teeth.

Generally I prefer the fewer teeth of those recommendations. It gives you a little bit stronger shoulder and usually enough teeth for a good brisk feed rate. In a 56" F, I especially like 50 teeth because it gives you two changes per box of teeth. That just makes life in general a whole lot simpler. If you happen to be seriously underpowered, you might go with something like a 52" B pattern saw with only 36 teeth as opposed to a 52" B with the normal 40 teeth. Or a 56" B with 40 or 42 teeth. Remember that the diameter of the saw does not affect the power requirements. The amount of power needed is all about the number of teeth in the saw. Each tooth draws power, so the more teeth you have, the more power you need.

It's all about what size logs you will be sawing relative to the diameter of the saw and how much power you have to work with. It should have nothing to do with what pattern your neighbor runs, or what your father or grandfather did, or what seems to be the most popular.

Interested to learn more from Casey Creamer? You can watch our video on how Casey hammers circular saws on *The Northern Logger* YouTube page. Just search for "The Northern Logger" on YouTube and click the video entitled "How to Hammer a Circular Saw with Casey Creamer." Please send future questions about sawmills and their operation to Casey Creamer, saw doctor and president of Seneca Saw Works, Inc., PO Box 681, Burdett, NY 14818, (607) 546-5887. You can also reach out by email: [casey@senecasaw.com](mailto:casey@senecasaw.com).



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