

Sawmill Forum

BY CASEY CREAMER

I am having trouble with my circular saw heating and running out of the log. I have talked with a number of experts, and some said to give it more lead, while others said that my saw must be dished the wrong way. I was also told by some to use the guides to keep it from running out. Others suggested sharpening the teeth so that they are high to the log side to keep the saw from running out. Which piece of advice should I follow here?

The short answer is that you should follow none of this advice. These well-meaning so-called experts really don't quite understand what it takes to make a sawmill run properly. They have some ideas about how to sort of get by short term, but their solutions will not work to fix your problem.

When someone describes a saw as being dished the wrong way, I usually ask them what the right way would be. Any saw can be dished towards the log side or dished towards the board side. Neither is the right way. The saw should be flat on the log side if you want it to run straight. If worn collars are dishing the saw, then fix the collars so that the saw that is flat on the log side will still be flat on the log side when you tighten the nut on the collars.

If you are sharpening the saw high to

the board side and that is making the saw dish to the board side and run out of the log, the answer is simple. No, you don't hammer the saw to be dished toward the log side. You need to learn how to sharpen the saw so that the cutting edge is square to the saw and the corners of the teeth provide an equal amount of side clearance on both sides of the saw.

Any time anyone tells you that the saw should be dished in either direction instead of being flat on the log side, just ask them why. They might respond that it should be dished so that when it comes up to speed the centrifugal force will straighten it up. Let's consider that answer: If centrifugal force was really going to straighten the saw up, what would it do to a saw that was already straight? That seems like a waste of good old centrifugal force! And

if centrifugal force would really straighten the saw, why have I spent an entire career straightening these bent saws? If centrifugal force would straighten a saw that was dished towards the log side, why wouldn't it straighten a saw that is dished towards the board side?

I sometimes get to hammer saws that had been set while in the cut. The result is a saw that is severely bent over the collar. Some of these saws are bent so badly that when I uncrate them, the board holding them in the crate flies across the room as soon as I undo the nut that holds the board onto the crate. Sometimes, the bend at the collar line is so sharp that when I clean the saw with a wire cup brush on a grinder, I can actually feel that bend through the grinder. How come centrifugal force didn't straighten a saw like that? Can you imagine what centrifugal force might do to a band saw if it could really straighten a circular saw?

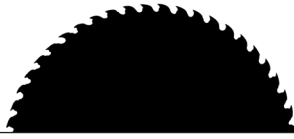
The reality is that at 500 to 700 RPM or 8,000 to 10,000 SFPM, we just don't create enough centrifugal force to do much of anything to these saws. That is why when a saw is dished in either direction, it is time to bring it to a professional to get it hammered properly. I have been dealing with this centrifugal force myth ever since I started hammering saws. I often wonder where this myth came from and why no one ever seems to question it.

I think I may have an idea of its origins.

Let me begin by explaining that there are two completely different kinds of dish that a saw could have. The most common is just a saw that is bent and therefore considered to be dished regardless of which direction. The second would be a tension dish. A tension dish occurs when a saw has way too much tension or stretch in the body and, as a result, there is no place for that stretched metal to go other than to dish. In this case, you can pop the dish back and forth to either side and it will stay until you pop it the other way. That is a tension dish – it won't work for a saw that is running anywhere near a normal speed. If you look at the lid of a canning jar, you will notice it is dished up



Creamer checks the vertical position to make sure it is flat on the log side and NOT dished in either direction.



in the center. During the canning process it will dish down and stay down until the jar is opened. If it is stretched exactly the right amount, it will pop down during the canning process and stay that way until the pressure is relieved by opening the jar. Then it will pop up and stay that way.

Now, let's talk about saw tension a little. When you are sawing lumber, there is a little heat at the rim of the saw from the friction of sawing. That heat will stretch the rim of the saw a little. Add to that the resistance of the teeth hitting the wood, which will also stretch the rim a little. That stretching increases the circumference while the saw is in the cut. If you increase the circumference without increasing the diameter or changing 3.14, you no longer have a perfect circle. Instead, you have something that is shaped more like a potato chip. My job, in addition to making the saw flat on the log side, is to stretch part of the body of the saw to compensate for the stretch that is going to happen at the rim when it is sawing. Yes, believe it or not, we lengthen a portion of the body to compensate for the lengthening that will happen to the rim. (By the way, wide band saws are the same in that respect. The rim will stretch when in the cut, so the saw filer needs to stretch the body of the saw the right amount without dishing the body.)

Now, here is where I suspect the centrifugal force myth got its start. Assuming a properly hammered saw, if the saw is standing up in a vertical position and I check the saw with a long straight edge from 12:00 to 6:00, it should show flat. But there is a different way to check the amount of tension (stretch) in the body of the saw. To check the tension, we put the saw on a bench in a horizontal position. With the rim of the saw touching the bench at 12:00, we then pick up the saw at 6:00, just enough that the eye is no longer touching the bench. At that point, we put a long straight edge across the saw from 3:00 to 9:00 and look for a light gap between the saw and our straight edge. That is also called drop. By measuring the amount of drop, we are measuring the amount of tension or stretch in the saw.

We also use shorter straight edges and curved tension gauges to measure that drop and its location more accurately.

So, at that moment when you are checking the amount of drop in the body of the saw, one might conclude that the saw is dished. Of course, a properly hammered saw will show the same amount of drop on both sides if you take the time to turn the saw over and check the other side. What you are looking at is not a dished saw but rather a saw that is flat on the log side when standing up and has a certain amount of drop when horizontal and in a tension checking position. If that is where the dished saw myth comes from, that wrongly called dish does come out of the saw when it is in a vertical position even while it is standing still.

All that said, I still have no idea of where the centrifugal force part of the myth came from. If anyone has any clues, please feel free to share them with me. In the meantime, the best way to make a mill run properly is to have your saw hammered properly, meaning flat on the log side, with an acceptable amount of wobble, and the right amount of tension in the right location. From there, make sure your collars are machined properly, the carriage and track are properly aligned, and you have sharpened the teeth soon enough and accurately enough. After that, if you are running a normal amount of lead (1/32" to 1/16") you should be able to produce some accurate lumber in an efficient manner.

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.



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John H.P. Brightman, Jr.
 May 12, 1938–August 20, 2021
 Age 83 passed away peacefully on Friday, August 20, 2021

John owned & operated Brightman Lumber Co. in Assonet, MA.

John cherished his wife, children and great-grandchildren as well as all his relatives, friends, and all the wonderful people he met in the wood business.

John's full obituary can be read at the Auclair Funeral Home, Fall River, MA

"I TOOK A WALK IN THE WOODS AND CAME OUT TALLER THAN THE TREES"
 Henry David Thoreau