

SAWMILL FORUM

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I just got a new spider gauge to check the side clearances on my teeth. Do I set it up to a new set of bits?

If you had a new set of bits that were perfect that you put in a saw that had perfect sockets and no bent shoulders, that would be the ideal opportunity to set up your spider gauge. The only problem is that nothing will be perfect if you measure it close enough. It would be unlikely that any one of those three things would be perfect and just about impossible for all three of them to be perfect at the same time.

There are two different ways that you can set up your spider

gauge to start with. The first one is to just start checking the log side of a particular tooth with it. Turn the adjusting screw until it just barely misses the log side corner of the tooth. Now check the other side. If the tooth, socket, and shoulder are correct the spider will just barely miss the board side corner of the tooth. If it hits the board side corner, adjust it to just barely miss the board side corner. Now go back and check the log side corner. You will see a gap. If you can measure that gap with a set of feeler gauges, you can divide that gap by two and then set the spider gauge so that it has that much gap on the log side corner of the tooth. That should be the right setting for all of the teeth in the saw.

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There is another, slightly more scientific way to check. Measure the exact width of one of your bits. Measure corner to corner, otherwise known as the kerf. If you are using a 9/32 bit, it should measure 9/32" or .281" in a perfect world. If you are using a saw with an 8-gauge rim it should measure .165" in the same perfect world. For the sake of having something to work with, let's just say that your 9/32 bits actually measure .281 and your 8 gauge saw actually measures .165" at the rim. If you subtract .165 from .281 you get .116. Now divide that in half to get .058" clearance per side. Next you need to find something hanging around that measures exactly .058" thick. You might find that a relatively new penny comes pretty close. Now place your spider gauge against the shoulder of the saw and adjust the gauge so that your .058" shim (the penny) will just barely fit between the spider gauge and the shoulder of the saw. If you did all of the measurements and math correctly you should now have a spider gauge that is set to measure the side clearances of your bits in your saw based on the size of the bits relative to the thickness of your saw.

I would suggest that you build in a little tolerance into your measurements so that you don't drive yourself crazy trying to get all of the side clearances to be exactly the same. Remember the old adage: Show me something that is perfect and I will show you something you didn't measure close enough. If you open up the spider gauge just a couple of thousandths to allow for some running tolerance, you will be much happier in your quest for accuracy.

Once you have established the setting for the spider gauge for checking the kerf, you can quickly go from one tooth to the next to see if your gauge happens to hit any of the bits. I start with one side and go all the way around the saw and then do the same thing on the other side. You can almost do it with your eyes closed. Just mark the saw at any place where the gauge hits the tooth.

The basic method is to first find any teeth that the gauge hits. Once you find one, you need to find out why it is hitting before you can decide on a remedy.

There are only a few possibilities, assuming you are dealing with a new tooth.

- 1 The bit is sharpened out of square.
2. The bit is side ground more on one side than the other.
3. The vee groove on the saw is off center.
4. The shoulder is bent.

There are a few other obscure possibilities, but these four should cover almost all of what you are likely to see. Of course once you have sharpened and or swaged the bits, you have added more ways to essentially get to numbers 1 and 2.

Once you find the offending tooth, you will have to re-adjust the spider gauge for a different purpose. You need



to adjust it to read the shoulder and also the part of the bit that is closest to the shoulder. This part of the bit is just the top of the bit body with no side grinding or kerf. If the bit body checks out okay and the shoulder checks out okay, meaning the same from side to side, then your problem is either number 1 or 2.

If it is a side grinding problem, you could correct it by side dressing the bit with a file. But then you no longer have a 9/32" measurement to the kerf of that bit. If all of the bits have that problem, you can go ahead and side dress them all, but be aware that you are running slightly less kerf than what a new bit should have. If you are only side dressing one bit, chances are you will then have one bit that has a smaller kerf than the rest which will of course mark the lumber just about the same way one that is sticking out on one side would. You can easily chase yourself around in circles with this sort of thing if you are not careful.

If it turns out that the shoulder is bent, it can easily be corrected with a crescent wrench. Be gentle and try not to get into the situation where you bend it too far and then have to bend it back too far and end up bending it back and forth several times before getting it centered.

Remember that your finished product is what is called "rough sawn lumber." So don't get too carried away trying to eliminate the saw marks. On the other hand, the better you can get all of your bits in line with each other, the better your saw will perform. Each tooth cuts a path for the next tooth. If one tooth is off to one side, the tooth before it didn't give it the proper path and the tooth after it didn't get the proper path cleared for it. In that case there would be at least two teeth that would have to work extra hard to do their part of the job.

Get them right, but use a realistic running tolerance.

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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