

SAWMILL FORUM

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Here is one that had me baffled for a while. A customer of mine brought in a saw that was about ten years old and I have been the only one working on it during that time period.

My customer and I both noticed that the teeth were pointed off to one side (the board side). The bits were not off center (like from a mis-manufactured vee groove) and the bits were not improperly side ground or mis-manufactured in any way that I could detect.

This saw certainly had its fair share of wear, but still I could see no reason for this problem and in 30 years of being a saw doctor, this is the first time I have seen this particular condition. That is why I never think to myself that I have seen it all, because I haven't yet.. if I do ever get to that point I suspect I will retire.

One thing that was a little different about this saw was that it had a combination of winter bits and winter shanks. Simonds use the name "Super Shanks" and "Standall Bits" Other manufacturers have their own clever names, but I will use the generic version, winter bits or shanks versus regular bits or shanks.

Although I have seen saws before with this unwanted bit and shank combination, this was still the first time that I saw this particular problem with the bits pointing off to one side.

I spent a lot of time studying this saw and trying to figure out the cause of this peculiar problem. The milling of the vee groove looked okay and the socket geometry was within running tolerance. As I was starting to come to the conclusion that the sockets were just plain worn out (for lack of a better diagnosis) and that I should scrap the saw, I noticed that this saw had one shoulder that had been replaced by me. And the tooth in that socket was pointing the same amount and direction as the rest of the bits in the saw. That finding immediately ruled out a socket problem in the saw because that was a shoulder and socket from a different saw that had been welded into place. If there was something defective about the original sockets in this saw, it was certainly highly

unlikely that the shoulder and socket from another saw would have the exact same problem in the exact same direction. Especially since this was the first time I had encountered this problem in 30 years.

I did try replacing a few of the bits to see if that would correct the problem for those few bits and it changed nothing. Then I tried replacing the shank and the bit with a winter shank and a regular bit and all of a sudden I had one bit pointing straight ahead in that saw. So I tried another and another and each one that I replaced looked okay. Naturally I went ahead and replaced all of the bits and shanks in the saw and then re-hammered the saw and everything looked fine. Of course I worried that after the first cut the bits would revert back to pointing to one side, but that didn't happen. The customer related to me that this was the best that saw had run in quite some time, and last I heard it was still performing properly.

Then about a month after the problem with this saw was solved, another saw came in for repair that had the same problem. Wow, thirty years of working on saws and then in the same year I get to see a second one. That is when I noticed one other thing these two saws had in common aside from the fact that their bits were pointing to the board side. This saw also had that dreaded winter shank and winter bit combination. Of course I didn't waste much time staring at this saw. I just replaced the bits and shanks and hammered the saw and away it went with all of its bits looking straight ahead.

That got me thinking that the problem must have been somehow related to combining winter shanks and winter bits in the same socket. But then why haven't I seen that same problem with other saws that have that wrong combination? That question had me scratching my head for a while until I happened to be talking with a friend and colleague Kent Erding from Wyckoff, Minnesota. He informed me that he ran into a similar problem only that he had noticed that the tit on the shank that engages the body of the bit when pulling then down into the socket, seemed to be a little out of square and he thought that was the cause of the problem. Of course the question remains as to whether that little tit



Regular bit with winter shank.



Winter bit with regular shank.



Winter bit with winter shank.

was out of square because of a manufacturing problem, or because it was worn that way. And then it further occurred to me that there is a possibility that mating a winter bit to a winter shank may actually cause some extra sort of wear on that tit that makes it out of square and that is what was cocking these bits off to one side.

It is hard to know for sure, but at least now I know what to do when I see this same problem next time, and I also will be even more insistent that any time I see winter bits and winter shanks together, that I correct that problem right away. In the past I have just informed the customer that what they were doing was wrong and that it should be changed some time in the future.

One of the reasons we see that combination more than we would like is that sawyers will eventually try running carbide bits just to see if they like them or not. In the north where we get to saw frozen timber, it is quite common to run a winter shank with a regular bit, although some mills prefer to run a regular shank with a winter bit instead. If you are running winter shanks and you want to try carbide bits, you are going to run into a problem. Almost all of the carbide bits on the market to date are based on a winter bit. Once you are committed to running carbide winter bits, you will change the shanks to regular shanks and of course have the saw rehammered because changing shanks will change the tension in the saw.

That is okay once you are committed to running carbide bits on a regular basis, but when you just want to try them once to see how you like them, you really don't feel like having to change the shanks and hammer the saw too. So people try them and then they have that wrong combination of winter bit and winter shanks. If they don't like the carbide then they quickly go back to their regular bits with no problem. But if they happened to take a liking to those carbide bits, now they have that wrong combination in the saw and they probably don't feel like changing the shanks and hammering the saw until the shanks are at least close to worn out.

Now I know that is the wrong way to get by. If you want to run the carbide bits more than one day's sawing, we have to change the shanks and re-hammer the saw. Otherwise don't try the carbide bits until the shanks are just about worn out anyway.

Below are three of the four possible bit and shank combinations:

Picture 1. shows the regular bit and winter shank combination. Picture 2. shows the regular shank and winter bit combination. Picture 3. shows the unwanted winter bit and winter shank combination.

Not shown is a regular shank combined with a regular bit. That one is not good for cutting frozen timber, although it is fine for the rest of the year.

The idea of the combinations in the first two pictures is that when you are sawing frozen logs, you don't want a perfectly round gullet area. What you want is a protrusion into that gullet area that will prevent the frozen sawdust from swirling around and around in the gullet because it is that swirling action that tends to break the frozen, brittle chips into smaller, finer dust that will spill out of the gullet instead of waiting to be ejected from the gullet when that tooth exits the cut.

Picture 3 shows that when you combine a winter shank and a winter bit you have the protrusions lining up with each other and forming a rounded gullet that is now smaller than the original gullet. Not only will the saw dust swirl and break up and spill out of that gullet, but because the gullet is smaller, you can't feed quite as fast as you should be feeding to maintain a proper chip size to prevent sawdust spillage.

In other words, don't do it.

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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