

SAWMILL FORUM

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As many of my readers know I am always willing to troubleshoot mills over the phone (or even via email) for free as long as the person on the other end can give me good, accurate data and answers to my questions.

On the other hand, there are times when either the data isn't reliable enough, or I just have to see things for myself for one reason or another. That is the kind of situation that calls for me to make an onsite troubleshooting visit to the mill, which of course is not for free.

When I first started doing these onsite troubleshooting sessions many years ago, it was painfully--yet politely--pointed out to me by one of my customers that as long as I charge so much for the visit, I should also be producing a report that can be sent to the customer in a day or two. I couldn't argue with that logic, and have been following that advice ever since.

There are a lot of folks who are out there and willing to help you solve whatever mill problems you have. Some are salesmen who will troubleshoot your mill for free in hopes of keeping you as a customer, while others may be friendly competitors who are more than willing to lend a helping hand when they can. They mostly seem to have good intentions and can do you plenty of good at times. But then there are times when you just need a pro to come in and thoroughly look at the entire system from top to bottom to be able to give you a proper assessment of what is going on at your operation. Whether the help is free or not, the troubleshooter ought to be willing to stand behind his or her recommendations by putting them in writing.

The written document not only represents a commitment, but it also gives the mill owner, manager, sawyer, filer--and whoever else--the exact wording cast in stone, forever and ever so that there will be no misunderstandings or forgotten aspects of the troubleshooting session. There are times when no matter how well the meeting goes, there are people there who will think they heard you say something different. The written report is also handy for anyone to refer to a year or two later when the same problem crops up again, rather

than relying on memory.

Here is how a typical onsite troubleshooting session usually works, and in this order:

1. I gather info and more detail about the reported symptoms.
2. I look over the entire mill from a bit of a distance to get an overall feel for the mill.
3. I start collecting data, making absolutely sure not to try to jump to any conclusions during that process.
4. I sit down and analyze that data to come up with an accurate assessment of the probable causes of the reported symptoms and problems.
5. I then develop a list of solutions and recommendations.
6. I meet with any and all of the interested parties and discuss my findings and recommendations.
7. I go back to my shop and produce a written report (along with a bill for my services) and mail it to the customer.

Below is a copy of a report I wrote up for a recent onsite troubleshooting session:

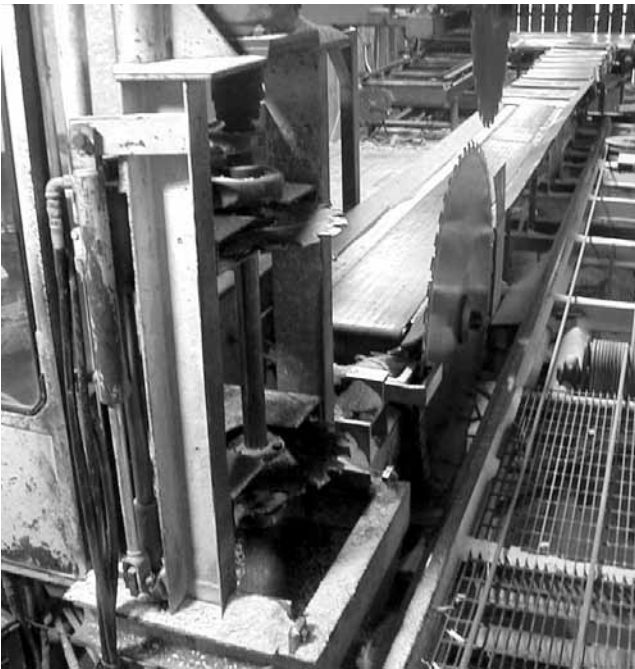
Sawmill Troubleshooting Report for: **XXXX XXXXXX Lumber Company**

Reported Symptoms:

Saw runs out of log and heats just outside of collar line.
Saws need to be hammered too often.

Findings:

1. Flat track has sawdust build up on it.
2. Bits are mismanufactured to have more side clearance on board side than log side.
3. Guides set a little too tight.
4. WD-40 between collar and saw.
5. Bits are sharpened properly.
6. End of mandrel unsupported.
7. Mandrel level in middle, but not level on the unsupported end.
8. Collar movement .010" towards board side.
9. Saw is flat on log side when the nut is not tight. When the



Winter bit with winter shank.

nut it tight the saw is slightly dished towards the board side.

10. Saw runout is +/- .020"
11. Collar runout is .004"
12. When the saw is changed on mandrel 180 degrees, the two extreme points swap places.
13. Lead as measured from first headblock is .120".
14. Lead as measured from second headblock is .090".
15. Collar outside diameter match is okay, but not perfect.
16. Collar taper appears to be okay.
17. Spreader alignment is okay.
18. Headblocks are out of alignment with each other.
19. Headblocks are out of alignment relative to the travel of the carriage by over .250". (1/4")
20. Headblocks do not appear to have enough adjustment capability to be properly adjusted to be in line with each other and the travel of the carriage.
21. Travel of the carriage deviates .060" and .040" when carriage is 6 and 8 feet into cut respectively.

Possible Causes:

1. Track cleaner not operating properly.
2. Factory error.
3. Sawyer error.
4. Sawyer error.
7. Because end of mandrel lacks sufficient support.
8. Collar problem.
9. Collar is dishing saw.
10. Saw runout is magnified by collar and mandrel problems.
14. Difference in lead readings is indication of track alignment problem.
21. Track is not aligned properly.

Recommendations:

1. Build a better track cleaner.
2. Replace bits with bits that have been properly inspected before installation.

3. Set guides properly with a little light on each side.
4. Use WD-40 on saw body at the end of the day to prevent rust and create a little less friction. Do not put WD-40 between the collar and the saw because this liquid tries to fill the gap that is created by the taper in the collar, thus partially eliminating the taper that is sorely needed.
6. & 7. Remove the two hydraulic pumps from the unsupported end of the mandrel and give them their own power source. If practical, move the outboard driven pulley to be between the two bearings. Or if needed, build addition to husk frame and move bearing so that the pulley can be between the two bearings.
8. thru 12. Have collars re-machined.
13. & 14. Correct lead after mandrel support issue has been resolved. New lead should be one to three thirty seconds of an inch.
- 18., 19., 20. Fabricate way to increase adjustment capabilities and then adjust headblocks properly.

Once you have fabricated the necessary adjustability into the headblocks you can start by taking a very accurate measurement from the first head block to a marked spot on the rim of the saw at 9:00 as viewed from the carriage. Next, move the carriage so that you can take an exact measurement from the third (last) headblock to exactly the same spot on the rim of the saw. Now adjust the headblock accordingly. Next, recheck the distance from the first headblock to the saw. Adjust first headblock as needed. Repeat these steps until you can get exactly the same measurements from the first headblock to the saw and the last headblock to the saw.

Now use a tightly stretched string to bring the middle headblock into exact alignment with the first and last headblocks.. What you have done was to first align the first and last headblocks relative to the travel of the carriage and then to align all three with each other by bringing the middle one into alignment with the first and last ones.

Observations:

No sawmill will ever be perfect if it is checked properly. What we look for is not only each data point that directly relates to the stated symptoms, but the combination of little problems that by themselves might not be a significant problem, but when added up can combine to create real sawing accuracy and productivity problems.

What we have here is that the teeth were pulling the saw out of the log. The collar was dishing the saw slightly which would also tend to make the saw run out of the log and heat in the body, which in turn will make the saw run out farther.

Conversely the misalignment of the headblocks would create a situation where the lumber measurements would suggest that the saw was running in, if the saw had been sawing a perfectly straight line. In this case the saw was running out which was partially being offset by the misalignment of the headblocks so that although the saw heated and ran poorly, the lumber probably measured fairly close to being within running tolerance depending on just how hot the saw was

at any given moment.

When troubleshooting a sawmill it is of the utmost importance for one to be able to gather all of the data and then look at how all of the findings relate to each other to be able to form a complete picture as to exactly what is happening in this mill.

It will take a lot of downtime and hard work to try to respond to all of my recommendations at once. I would prioritize the lists thusly:

1. Get proper teeth into that saw.
2. Solve the headblock adjustability problem and get then adjusted properly to be in line with the travel of the carriage and in line with each other. This might be enough to get you running again and making some lumber.
3. Take care of the unsupported mandrel and while you are at it, get the whole mandrel to a machine shop to be resurfaced and also to make sure the mandrel is straight enough and not bent as a result of that part being unsupported for so long.
4. Straighten the track.

The other recommendations can just be worked in anywhere as you get the time.

I should add that when gathering the data there will usually be at least one interested person looking over my shoulder

and asking what I have found. After two or three such questions I generally stop what I am doing and politely explain that rather than try to draw conclusions from each piece of data while it is being collected, I intend to wait until all of the data is in before I start deciding what in the mill is cause which symptoms.

That is a very important part of proper troubleshooting. In the case of this mill I could have possibly found the problem with the teeth and stopped right there. After all, that was certainly a direct cause that would have matched the reported symptoms with no problem. But you still have to go through the rest of the mill to get the complete story as to what is actually happening and how it relates to the symptoms. Often two or more problems may be canceling each other out until you go ahead and fix one of them. Then all of a sudden, it seems as though you have made the original problem much worse, until you get the whole picture and fix all of what needs to be fixed.

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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