Tuning a band saw.

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October 2011

Follow all manufacturers' guidelines when using any power tool. Use the tool manufacturer's instructions to tune the band saw. The steps outlined below have worked for me, and may not be appropriate for you or your equipment. These instructions are provided as is and should not be used independent of the manufacturer's instructions.

Each and every time you change the blade you have to go through all of these steps.

Terms Definitions follow the instructions.

1. Unplug the saw.

2. Open covers and clean all dust and debris from the saw.

3. Remove the blade; loosen the tension on the blade by turning the tension adjustment knob on top of the saw counter clockwise. Back out, all the way, the guide blocks and thrust bearings. Remove the blade insert from the table, it should just pop out with light pressure from below (the opening on the blade insert should just allow for the blade, if it is worn, replace it). Remove the alignment pin from the end of the blade slot on the table. The blade should come out now.

4. Clean dust off the tires on both wheels. Clean lightly with a mild detergent and water on a cloth. Make sure to dry completely. Check the condition of the tires if there are any cracks, or wear marks, replace the tires.

5. Install the new blade. Work it over both wheels and through the upper and lower guide sets (*note that a spring clamp to the wheel over the blade may take the place of your third hand). Tighten the tension enough to hold the blade in place and turn the wheels by hand to see if the blade is roughly centered on the wheels. You may have to adjust the alignment knob as you work the blade on the wheels. Leave all the guides and bearings away from the blade.

6. Tension the blade. Turn the wheel until the weld on the blade is between the wheels on the back of the saw (on the up stroke). On the back of the saw at the bottom of the tension bolt is a spring with a gauge. Adjust the gauge to the size of the blade you are installing (1/4, 3/8, ½...). Strum the back of the blade with your finger; it should make a harmonious bass sound. If your spring is worn, the tension may not be consistent with the gauge. You can replace the spring if you like from Lee Valley.

7. Align the blade. Turn the wheel by hand to see where the blade tracks on the tires. Adjust the alignment knob until you get the blade centered on the tire. When the blade runs centered, turn on the saw to see where the blade runs at operating speed, and adjust accordingly. Remember to unplug the saw before moving to the next step.

8. Align the thrust bearings. Once you have the blade aligned properly, bring the upper (then lower) thrust bearing up to the blade. You want this bearing as close as possible, without putting any pressure on the blade. Turn the wheel by hand, the bearing should not spin, or spin intermittently when the weld passes it. When you have them adjusted, lock the bearings in place.

9. Adjust the guide blocks. Make sure the guide blocks are flat and square on the face that touches the blade. Depending on wear, you may be able to grind them, or you may have to replace them. Set the guide blocks to sit just behind the kerf of the blade, they should not come in contact with the teeth, nor should they block the kerf. This will allow the sawdust to come away from the blade. With the guide block locks loose, using your fingers pinch the guide blocks up against the blade just touching on both sides then let go, and tighten the locks. They should be very close, almost touching.

10. Make sure to align the thrust bearing and the guide blocks on both the top and bottom guide assemblies. The method is the same on top as the bottom, but the bottom is usually a little harder to access.

11. Turn on the saw to confirm alignment and that the blade runs smooth.

12. Put the table insert and table alignment pin back in place.

13. Square the table. Raise the upper blade guide assembly out of the way. Place a 90 degree square flat on the table. Slide the square to the blade. If it's not square, loosen the table tilt lock, and adjust the stop bolt under the table until the table is square, then lock the table.

14. Close the covers.

15. With a new blade, you should relieve the back edge to make it easier to cut curves. To do this, lay a sharpening stone or fine file flat on the table and bring it gently to the back edge of the blade while it is running. Round off both sides of the back of the blade lightly.

16. Once the blade is aligned, you may have to align the fence to the blade. If the fence is square with the table, but the blade has a slight angle (left or right), you will find that you are fighting against the blade when you use the fence. To align the fence with the blade, try this;

    a. Remove the fence

Scrap plywood

Find a piece of scrap plywood a little smaller than the table, make sure it has a square corner at the top left when it's on the table. Mark a square line in the middle of the top, about half way down.

    b. Cut the line to about halfway freehand, being careful to stay on the line, and keep the plywood stable.

c. As you cut this line, you may notice that you have to angle the plywood to maintain the cut on the line. This angle is known as the draft. It's where you want to set the fence. Lock the plywood to the table with a spring clamp. Use a sliding bevel to copy the angle between the table and the plywood.

d. Install your fence, and align it with the sliding bevel.

17. Remember to always loosen the tension on the blade if you will not be using the saw for a week or more. Leaving tension will wear the blade and tires unevenly. Then remember to tighten the tension before you start working on a piece.

I hope you find these instructions worthwhile and enjoy using a well aligned band saw.

Definitions;

Drive wheel is the large wheel on the bottom which is connected to the motor. This wheel typically has no adjustments.

Driven wheel is the large wheel on top used to tension and align the blade.

Blade tension adjustment; is the knob on top of the saw. It adjusts the distance between the two wheels.

Blade alignment or tracking adjustment; is the knob on the back of the saw near the center of the top wheel. This adjusts the tilt of the axle on the top wheel.

Tires are the rubber/vinyl parts on the wheel which the blade rides on. There is a crown on the tire (or the wheel) so the center section rides higher than the edges.

Thrust bearing is the bearing directly behind the blade on both the upper and lower tracking assemblies. The thrust bearing is a key to smooth operation of the band saw. If it is of poor quality it should be replaced with a high quality sealed bearing, cost should be approximately $5 each. Check Canadian Bearings.

Guide blocks or bearings ride on either side of the blade on both the upper and lower tracking assemblies. These can be steel, plastic or phenolic material. The preferred material is the phenolic, known as Cool Blocks. Guide blocks may need to be ground down occasionally if they are worn unevenly. If you have to replace them, go for the Cool Blocks (Lee Valley).

Blade insert is normally a round aluminum piece that drops into the table around the blade. It should allow just enough room for the blade. If it is worn, high density plastic replacements are inexpensive and available from Lee Valley.

Wheel brush is installed on the drive wheel to clean dust off the tire to extend the life of the tire and improve blade tracking. If you don't have one, consider adding it.

Alignment wheel

Straight edge

Drive wheel

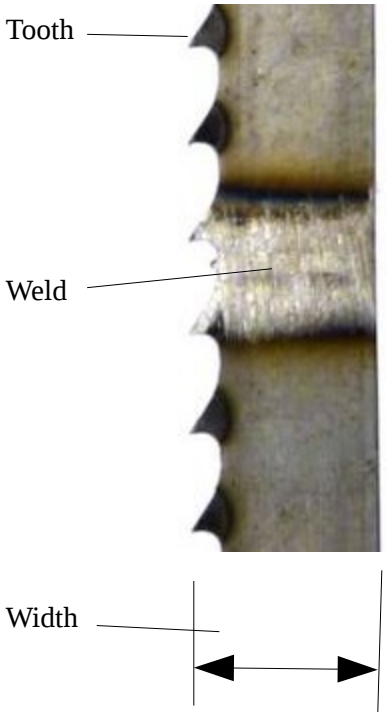
Coplanar is the measurement of alignment between the 2 wheels. Put a straight edge against the face of both wheels. If all 4 rim intersections connect with the straight edge, the wheels are considered coplanar. This may be difficult to achieve when aligning the blade to track properly. The first priority is to have the blade positioned well on the tire, and tracking straight.

Blades things to think about.

> **Styles** are defined as regular, hook and skip tooth. The skip tooth is best at removing material. **Blade width**; narrower blades (3/16 or ¼) turn much tighter radius than wider blades, but are more difficult to maintain a straight line. **TPI** (teeth per inch); 3 is good for rough cuts, 10 is slower but provides a smoother cut. 6 or 8 TPI provide gradients between rough and fine. Think about the material you plan to cut, at least 3 teeth must be in the work piece at all times. So 1" is the minimum material you should cut with 3 TPI. Harder material will require more TPI.

I purchased a ½", 3 TPI blade and followed these instructions. It's like I have a brand new band saw!

Kerf – the path cut by the teeth of the blade. Generally every tooth tilts tilts left or right and the outer edges of the those teeth define the kerf of the blade.



Bibliography;

- I prepared this document based on instructions I received at a Lee Valley workshop presented by Paul Aicken.
- I also searched several online sites and included excerpts from the following sites;
  - www.youtube.com/watch?v=rwu7GvJ76qU
  - Woodworker's Journal Contributing Editor Sandor Nagyszalanczy shows some key steps for maintaining your band saw to keep it running well for many years.
  - http://thewoodwhisperer.com/bandsaw-setup-tuneup/
  - Marc Spagnuolo of the Wood Whisperer discusses band saw tuneup.
  - http://www.popularwoodworking.com/techniques/joinery/band_saw_tool_school
  - Popular Woodworking magazine.