

Bandsaw Tune Up

By
Charles Self

One of the few machines around today that can still use a business card tune-up (using the business card to measure tolerances in at least one place) is the wood cutting bandsaw. The business card nicely sets the distance between the back of the bandsaw blade and the roller guide/bearing set into the upper and lower blade guide assemblies. That bearing remains still while the blade

starts, but turns when wood is fed into the blade causing it to touch the bearing surface. That's nearly a final step, though, and every bandsaw needs, first, to have the wheels set co-planar with each other so that drift of the blade is minimized and overall tracking is even and the same from turn to turn. Without co-planarity, you'll never get consistent cuts.

The Coplanar Bandsaw

So, let's start by unplugging the bandsaw, and go from there to what co-planarity is. It sounds unfortunately technical and over-complicated, but is really quite simple--and necessary.

Fortunately, co-planarity is both simple to measure, and an easy concept when you just think of it as aligning the upper bandsaw wheel with the lower. It is more easily set on some saws than on others, but generally simple adjustments--break out the manual for your saw, because we don't have the room to tell you how to do the job for every bandsaw out there--are all that is needed. In a few cases, you'll need to pull either the upper or lower bandsaw wheel and add a washer on the axle to step it out just that shade more, but generally built in adjustments should work. When you're done, tracking the blade to the center of the tire should be a simple job. Without co-planarity, it is an impossible job.

You need a 3' to 4' [straight-edge](#) to take the measurement. Remove the table if necessary (with European bandsaws, table removal is almost always needed, while American pattern--think Delta 14" style--may or may not need the table removed). Place the straightedge close to the center axle of the upper bandsaw wheel, making sure it is flat on two edges nearly opposite each other on the circumference of the wheel. The straightedge must lie on the other wheel in a similar flat manner. If it doesn't, follow your manual to make needed adjustments.

Many European pattern bandsaws need blocking to get enough frame clearance to let you measure co-planarity. That is, cut a block thick enough to give the clearance needed (usually about 4" thick) for the straightedge to reach each wheel (make sure the blocks are the same thickness, of course). Clamp to each wheel and then lay the straightedge across the blocks to check alignment.

Replace the table and use an [engineer's square](#) to set it to 90 degrees to the blade, if it was removed. If it wasn't removed, just check the 90 degree setting with the square.

Replace the [blade](#) with one of the correct pattern for the work you expect to do: use a 3-4 tooth blade for resawing, with a blade width of at least 3/8" (wider is generally considered better, but here is a point for experimentation; lots of people never go wider than 1/2" with top quality resaw blades, and produce superb results). For general work, a 1/4" blade allows reasonable scrolling

ability, along with the ability to cut long sweeping curves and even straight lines without much problem. Quarter-inch blades come in a wide range of tooth per inch numbers, starting at 4 and rising to 14. Really fine cuts deserve 14 tpi, with standard cutting probably best done with a 10 tpi blade (as you gain experience, you'll develop preferences that may or may not match those of the experts: go with the preferences you develop as long as they produce the best results for you). For really fine scrolling work with a bandsaw, there are 1/8" and even 1/16" blades. These come with as many as 24 tpi for super fine cuts.

Tracking the Blade

Track the blade after bringing the tension in close but not exact (get enough tension on the blade to keep it on the wheel). Each bandsaw has a tracking adjustment wheel, either behind, next to or above the upper wheel. Again, your manual is a help here.

Blade Tune-Up

Tension the blade to its appropriate mark on your saw's tensioning scale. If your saw is old or the scale is otherwise out of adjustment, you'll need to tension till it seems right, then make a test cut or two in scrap, and just generally work it in by trial and error. When the tensioning is done, the blade no longer goes 'tunk' when you flick it with a thumb; it will have a slight musical tone.



JET 18" Bandsaw Adjusting Mechanism

Get a stone and gently round the back of the bandsaw blade. Almost any mild cutting stone works for this, with the blade running if the stone has a handle. If your stone is handheld, feed the blade by hand (just turn the upper wheel, with the saw unplugged). What this operation does is remove any possible burrs that might interfere with smooth cutting.



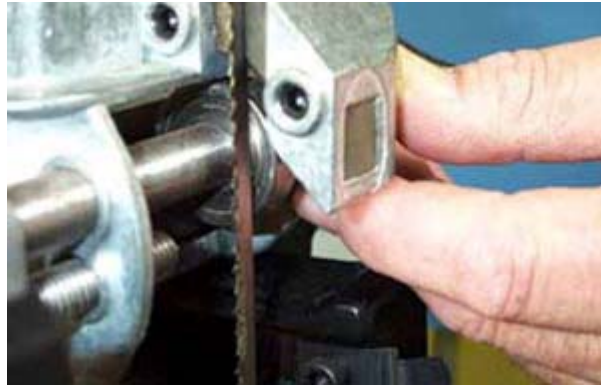
DELTA Tension Adjustment

Now, move your [Cool Blocks™](#) (or other guides) in at the upper guide assembly. This, again, is a preference adjustment. I find it best to bring the guide to the point it barely touches the side of the blade, and then back off very, very little. Do this on both sides of the blade. As you gain experience, you may want to move the guides in so they actually touch the blade--or you may prefer to back off a few more thousandths, depending on how it feels to you as you cut. Move the rear wheel bearing so that the blade is distanced from it by the thickness of a business card, and no more. Many of these bearings are mounted on shaped rods, and the bearings, top and bottom if there are top and bottom, need to be turned so that the back of the blade bears on nearly 50 percent of the bearing wheel when wood is fed into the blade.

Repeat this process with the lower blade guide assembly-- you may have to tilt the table for this adjustment. In some cases, lower blade guide adjustment is most easily done with the table removed, but the extra hassle when the table is left in place seems to pay off in greater accuracy, so avoid the removal if at all possible. Now, re-check. Spin the upper wheel several times (by hand) and check the blade's tracking, and go on from there. If coplanarity is fine, the tracking can easily be brought into line, after which you can



DELTA Upper Guides



DELTA Lower Guides

close the
doors, plug
the
machine in,
and try a
test cut.

Dealing with Out-of-Balance Wheels

Out-of-balance wheels may still create a problem. Out of balance conditions are shown by a vibration in the upper half of the bandsaw when the saw is running, and when all else has been tuned up. Out-of-balance conditions mean that one side, or point, on the out of balance wheel is heavier than the other. To check this, you need to spin and mark, spin and mark, spin and mark. Get a couple of marking pens. Remove the blade from the saw. Next, remove the tire from the upper wheel (you can balance the wheel with the tire in place, but when you change tires, you'll probably have to rebalance...on a time basis, you save time leaving the tire in place, and you may actually get a slightly more accurate balance, but traditionally, the tire is removed). Check to see if the manufacturer (or a previous owner) at some point clamped on balance weights. If so, remove them.

Clean the wheels after removing the tires. Almost any mineral spirits or turpentine will do fine to remove sawdust. Mark the bottom center of the case to have a match at the point where you're most likely to see a heavy spot on the wheel coming to rest. Spin the wheel once and make a mark on the wheel. Spin the wheel again, and make a second mark (you can use several colors of Sharpie or Magic Marker, or you can make small numbers--1,2,3, etc.) to indicate the results of each spin. I like the numbers because I never seem to have three colors of markers around when I need them. If you spin three times and the marks are all in about the same spot, the wheel is out of balance. If the marks are scattered, then the wheel is in balance. You may have to spin as many as 10 times to get an accurate indication of the out-of-balance location, but three spins are almost always essential.

If the wheel is out of balance, spin at least twice more to get a more precise location. Note the approximate center of the marks, and make a small X in the webbing between the wheel spokes (some wheels are solid, so make your mark just inside the outer rim of the wheel).

Use a 1/4" twist bit to drill at that mark, going very, very slowly. Drill to half the thickness of the web first, at most. Just get a shaving or two. Spin and check (mark with the second color now). Keeping going until that wheel is in balance--if the wheel is in balance, the spins result in arbitrary stopping points so that marks do not group at any arc on the wheel.

Repeat the process for the bottom wheel.

Re-Installing the Tires

Installing bandsaw tires is not as difficult as a lot of people believe. To ease the job, you might want to go to a motorcycle shop and buy a couple of their small tire irons (you can also use a flat blade screwdriver, but small motorcycle tire irons work more smoothly in my experience, and are designed to be easier on soft rims). Now, mark the exact position of the wheel on its axle (remember, this wheel is already balanced), and remove the wheel from the saw. Get a 2" or 3" C clamp, and pull the tire halfway around the saw, clamping one spot. Instead, you may insert a tire iron here and hold it, while you work the rest of the tire on with the second tire iron. Without the tire iron, gently use the flat blade screwdriver to work the tire onto the wheel. Use care with both screwdriver and tire irons. A lot of bandsaw wheels these days are cast aluminum, and either tool can chew the wheel up badly if used too vigorously.

When using the second tire iron, or the screwdriver, take small bites as you go. This helps stretch the tire evenly on the wheel.

Re-install the wheel, aligning with your earlier marks. Repeat the process with the other wheel.

At this point, your bandsaw is tuned and ready to go. If you've never before had a tuned bandsaw, you'll note a major difference in cutting control.



Blade Rides On Center Of Tires