

Bandsaw: choosing, setting up, adjusting

by Kurt Hertzog

How big a bandsaw do I need? Is cast iron or welded steel construction better? How much horsepower? What's the best blade? How much blade tension, what about fences and guides? And on and on.

It's hard to imagine getting far in woodturning without a bandsaw. I'm going to share the basic setup I use along with information gleaned from experts I have faith in.

Safety

You should always wear safety glasses when bandsawing and also ear muffs or ear plugs for hearing protection. Keep safety gear hung on the saw, photo **1**, or immediately nearby. Being close at hand means it'll be used when needed.

Don't ever put your hands in the blade's path, just don't; instead, train yourself to steer and push from the sides, **2**. To keep your hands out of harm's way, buy or make push sticks, **3**. Keep the area around your saw open and free of trip hazards front and back. Often it is necessary to finish a cut by pulling the stock from the back of the saw. You need to be able to get there and have room to work.

Always unplug the bandsaw power cord when working on it.



1. Gear nearby – Unsightly but efficient. If your personal protective equipment is handy you'll use it. Notice the glasses, ear plugs, feather boards, and push stick, all stored on the saw housing and at hand.



2. Hands clear – Don't ever put your hands in the blade's path. Instead, train yourself to steer and push from the sides.



3. Push stick – Whether a homemade wooden one or a commercial aluminum one, get in the habit of using a push stick. To press work against the fence, use featherboards as well.





3. Wide throat – The throat specification is the largest cut possible from the blade to the frame. My 18" (45cm) saw really can cut an absolute maximum of 18-3/8"(46cm).



4. Tall throat – The depth of cut specification is the maximum thickness that can be cut with the blade guides fully open; on this saw, the blade tension adjustment wheel hangs low and would interfere with some cuts.

Bandsaw Specifications

In an ideal world, you'd buy the biggest and baddest saw that you could fit into your shop. As with lathes, new doesn't necessarily mean better. The bandsaws made 75 years ago can still be used and may have features no longer available. Focus on bandsaws intended for wood, you won't need multiple speeds or metal-sawing lubrication systems.

Underpowered saws can present problems so pick the more powerful motor; extra horsepower is rarely a problem. However, pay attention to the input voltage because more than two horsepower generally requires 220 volts.

These days larger saws (and cheaper lines) are typically made of welded steel rather than cast iron. This can make shipping easier and less costly, but maybe with some assembly required. Classic older machines are usually of cast iron.



5. Benchtop – Small benchtop saws have smaller specs, but setup and adjustment advice is the same as for floor-standing machines.



6. Heavy – Older cast-iron machines are heavy and vibrate less than modern welded-steel constructions. Note the red quick-tension-release lever on this saw.



7. Steel – Large new saws tend to be fabricated from sheet steel. This makes it cheap to ship in pieces for on-site assembly.

New or old, the key specifications are depth of cut and throat size. Depth of cut is the maximum thickness you can cut. Risers and longer blades can add depth-of-cut capability to some saws. The throat dimension, the distance from the vertical column to the blade, is how wide you can cut (**3-7**).





8. Fave blade – The standard, general purpose blade on my 18" saw is a 3/4" (2cm), 3tpi, hook-tooth blade. It can't cut small circles but I'll change to a narrower blade as needed.

Blade selection

There are more opinions about blade selection than there are blades. For most turners, standard carbon steel or Swedish steel blades will work nicely with no need for expensive carbide teeth. You can cut nearly all of the woods, most plastics, and a few of the softer metals, (aluminum, brass) with regular wood blades.

Generally speaking, use wider blades with fewer teeth per inch (tpi) blades for heavier work. Roughing bowl blanks from split logs would be suited for a 3/4" 3 tpi blade, **8**. The same blade could be used for cutting veneer, with good technique and fencing, but not for tight curves.

In general wide blades with few teeth make aggressive cuts while narrow blades with many teeth make smoother cuts. The wider the blade, the more difficult it is to turn a circle. A 1/4" (6mm) blade can cut a much smaller bowl blank than a 3/4" or 1" (2 or 2.5cm) blade. Depending on whether you make green salad bowls or doll house parts, you'll acquire a selection of blades that will cut with no more kerf than needed, and can be maneuvered in the materials you use (**9**).

I recommend buying a quality blade. It will have a better weld and grinding, allowing it to run smoother and provide longer service. The price difference between a bargain blade and a quality blade is minimal (**10**).



9. Blade collection – Most needs can be addressed with just a few blades. My collection includes 3/4" x 3tpi, 3/4" x 4tpi, 3/8" and 1/2" x 3 tpi, and 3/16" x 10 tpi. Most are hook-tooth.



10. Coiled up – When not in use, store blades coiled and hung out of the way. Notice the factory spec labels left on new unused blades.

EXPLORE!

Click the blue box or scan the QR code to follow the link and learn more about the turner's bandsaw.



tiny.cc/bandsaw





11. Teeth – When installing a blade, be certain the teeth are pointing down at the table top.



12. Gullets – The rearmost part of the gullets should ride on the peak of the tire crown. Here, the blade is too far forward on the tire.



13. Crowned – This blade is adjusted about right. The back edge of the gullets rides on the crown of the tire.

Blade alignment

If your saw has upper and lower guides for the blade, it is best to remove the tabletop to install the blade and to set up tracking and guides. If there are no lower guides, leave the tabletop in place.

With the saw clean of shipping protectants and other debris, loosen and retract the upper and lower guides so they will be clear of the blade. Open both wheel door covers, make sure the tires are clean and intact, and lower the tension adjustment to minimum.

Install the blade by draping it around the lower wheel, through the slot in the table, and around the upper wheel. Be certain the teeth points are facing down at the tabletop, **11**. Increase the tension on the blade as indicated on the gauge, and slowly rotate the upper wheel by hand to let the blade find its natural position.



14. Adjuster – The wheel tracking adjustment knob, with locking wing nut, is located on the back side of the upper wheel cabinet.



15. Another – Make small adjustments under hand power, then check at power and lock the adjuster. Here's the tracking adjustment on another common saw.

Once the blade has become stable at some position on the tire, adjust the wheel tracking so the back edge of the blade gullets are riding on the center of the tire as you rotate the wheel by hand (**12-15**).





15. Inaccurate – The blade tension indicators on saws are notoriously inaccurate. I use them for initial setup and refine from there.



16. Unscientific – Not scientific but you'll be very close with 3/16" to 1/4" (4-6mm) deflection at mid-blade with guides out of the way and modest finger pressure.



17. Just right – “Modest” pressure is when the fingernail begins to show white.

Blade tension

Most saws have tension indicators for different blade widths. Regardless of the cost or quality of the bandsaw, its tension indicators are inaccurate (**15**). Use the gauge as a starting point.

The blade maker may have special setup instructions for their particular steel and blade. Without special requirements, use the following guidelines:

Once the blade has been tensioned per the gauge, and is tracking on the crown of the tires, the tension can be fine-tuned. Move the upper guides to their highest position, so they don't interfere.

With the power off, I use a simple push on the side of the blade to test the tension. At the table level, push on the side of the blade with one finger. It should flex about 1/4" (6mm) with modest pressure (**16**). Modest pressure is not too specific but I call “modest” as pushing only until the white begins to show on my fingernail, **17**. I tighten and loosen blade tension until

I get 1/4" (6mm) of flex with white-fingernail pressure. Not very scientific but it works for me. I find this test more repeatable and functional than the spring-loaded gauge on the back of the saw. I use this method for all widths of blades, from 3/16" (4mm) to 1" (2.5cm).

While some recommend de-tensioning the blade when the saw is not in use, I only do this on machines that have a quick-tensioning lever (photo 6). On saws that don't have this feature, I have not noticed any detrimental effect by leaving the blades tensioned all of the time.

Blade guides

Bandsaws have many types of blade guides, but most follow the same setup. If your saw has both upper and lower guides, the lower guides will be adjusted exactly the same as the uppers.

To begin, adjust the guide block position forward so that the front edges of the guides are just behind the tooth gullets, **18**. Leave them spaced away from the blade for now.





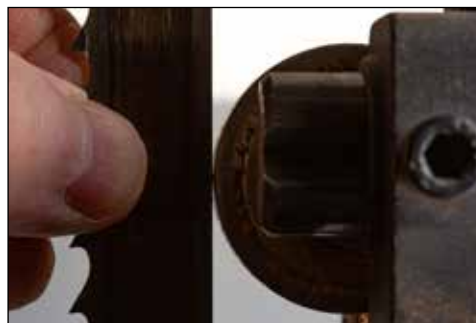
18. Guides – Position the guides so the front of the roller is just behind the tooth gullets.



19. Sides— Adjust the blade guide rollers until they almost touch the sides of the blade. They don't rotate with unloaded blade travel.



20. Clearance – The thrust bearing is adjusted to a small clearance at no power. Some use a dollar bill as a gauge, I just eyeball it.



21. Contact – The thrust bearing contacts the back of the blade with slight sawing pressure from the front.



22. Lowers – Lower guides are adjusted exactly the same as the upper guides.

Blade guides continued...

Adjust the blade thrust bearing forward until it almost touches the back of the blade, **20**. Rotate the upper wheel by hand and observe to be sure the thrust bearing is extremely close to the back of the blade but doesn't contact it as the blade runs normally. Pressure from the workpiece will deflect the blade rearward, bringing the thrust bearing into operation, **21**. You will often hear of using a dollar bill thickness as a spacer, which is not needed but OK.

Next, adjust the side bearings inward towards the blade, one side at a time. They should be as close as you can get without touching while you hand-turn the upper wheel to move the blade (**19**). Adjust both side bearings so they will come into contact when the blade is deflected sideward in operation. Repeat the adjustment

with the lower bearings if your saw has them, **22**. Replace the tabletop if you removed it.

Close the lower wheel cover door, reconnect the saw power, and turn the saw on. Keeping all body parts clear and safe, observe the blade tracking on the upper wheel tire. It should continue to run with the rear edge of the gullet tracking on the center of the tire. If for any reason it doesn't, adjust the tracking mechanism until it does.

As the blade runs unloaded, examine the thrust bearings and side bearings to be certain that all of them are stationary and not touching the blade. If any need readjustment, turn off and unplug the saw, then readjust as needed.





23. Angle guide — The tabletop angle guide located below the table is unreliable. Even when set, it shouldn't be relied upon for critical cuts without other checks.



24. Square — A speed square on as much of the blade as possible offers a quick and easy way to check the tabletop. Do both sides and watch out for a protruding table insert.

Squaring the tabletop

Regardless what the tabletop angle gauge says, **23**, it needs to be checked and aligned. With the blade and guides adjusted, bring the tabletop to the 0° setting on the gauge and lock in place. With the blade guard moved out of the way, use a speed square to check that the blade is square to the table. Use it just behind the gullets on both sides of the blade and use the tallest square you can fit, **24**.

Another and even better method of squaring the table (page **36**) is to make a partial cut into the face of a length of 2 x 4, as it faces the blade. Turn the saw off and leaving the board on the table, slide and rotate it around behind the blade. The back of the blade should slide perfectly into the cut. If it doesn't, the table is not square. Continue to adjust until a cut from the front will accept the blade from the back.

Many saws have an adjustable 90° stop built into the frame or bottom of the table. When you get the table square the first time, set the stop to it.

While you are attending to the tabletop, remove or minimize any current rust with naval jelly or an abrasive block. Clean the top with denatured alcohol and apply a quality paste wax.



Back of the blade

The back edge of the new bandsaw blade is usually razor sharp on the corners. Carefully break these sharp edges using a wooden block with 320 or 400 grit sandpaper wrapped around it. With the saw running, carefully sand the sharp corners away. It only takes a moment and a light contact at 45° on each side, with a slight rounding motion. It only needs to be done once and it will make a big improvement. This easing can also be done with a sharpening stone.



25. Fence – Check that the fence is parallel to the miter slot in the saw table.

Aligning the fence

The factory rip fence needs to be checked and adjusted to be parallel to the miter slot and perpendicular to the table. Slide the fence over to the miter slot and see if it lines up from front to back.

Saw fences vary but typically the mounting bolts for the fence-to-track mechanism can be loosened, allowing the fence to be accurately aligned to the miter slot, and retightened, **25**.

Move the fence to any open area of the table and use a square to check that it is perpendicular to the table. Check it at the front and the back of the fence, **26**. If the fence is out of square, you'll need to check its mounting fasteners to see if there is any adjustment possible. Make the necessary adjustments to bring the fence into square.

If your fence has no adjusting arrangements, you'll need to put shims under the mounting hardware. Thin metal, washers, tape, playing card material, folded aluminum foil, or other similar material works well enough.

If the fence is square in some locations but not over its entire length, there is a twist that may require a more complicated solution or perhaps fence replacement.



26. Square – Check with a square at both ends of the fence to be sure it is perpendicular to the tabletop and not twisted. Adjust with shims under the mounting bolts.

Miter gauge

You'll usually have a miter gauge that comes with the saw. Rarely are these actually 90° when they are set to their scale. Use a square against the miter gauge fence and check it against the miter slot itself. Loosen the lock on the miter fence and reposition until it is actually perpendicular to the slot, **27**. Tighten the lock at this position, then realign the pointer or scale on the fence to more accurately indicate 90°.



27. Miter gauge – Check the miter gauge against the miter slot in the saw table.

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Squaring the bandsaw tabletop

An accurate way to square the bandsaw table to its blade uses a length of 2x4 as a gauge. Stand the 2x4 on edge and make a cut part-way through. With the saw off, slide the 2x4 around behind the blade and see how it aligns with the cut.

If it slides in easily with the blade straight up and no flex, the table is perfectly perpendicular to the blade. If the blade doesn't slide easily into the cut without flex, make the necessary adjustments to the tabletop and repeat the process until the test succeeds.



A. With the table as square as you can get it, make a shallow cut in the tall face of the 2x4.



B. Turn off the saw and leave the wood standing on the surface of the table.



C. Leaving the saw turned off, slide the cut block around the back of the blade.



D. The back edge of the blade slides easily into the cut.

□



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