

Woodshop Band Saw Tool Tutorial

The [Setup](#), [Operation](#), and [Cleanup](#) Checklists of this guide are what instructors use to ensure that you can use the equipment according to community expectations.

The bandsaw is used to cut curved and other odd and intricate shapes that are not possible to make on the table saw. It is useful for cutting materials that are thicker than can be cut on the table saw, though its cuts are not as precise.

Usage Highlights

[Basic Woodshop Clearance](#) or [Class Equivalent](#) Required Before Use

SAFETY	CARE	CLEANUP
1. Position hands so they will not contact the blade, even if they slip, or the workpiece feeds faster than expected.	1. Ensure the guide blocks are adjusted properly and locked in place.	1. Dust off all surfaces.
2. Ensure the workpiece has one flat surface to place against the table.	2. Only cut wood and plastics	2. Clean out dust and debris from the bottom guides.
3. Position the blade guide at an appropriate height to support and guide the blade during the cut.	3. Feed slowly enough to let the blade do the work. Do not force the material through the saw.	3. Vacuum the dust from the bottom housing.
4. Have a push block at hand before beginning a cut, and use when appropriate.	4. Submit a maintenance request when needed.	4. Sweep the dust from the floor surrounding the saw.

Personal Protective Equipment

Safety glasses must always be worn. Hearing protection is highly recommended in the workshop, especially when the dust collection fan is active.

Tool Anatomy

MACHINE ANATOMY

Power Switch - on/off switch.



Maintenance Tag - Manually tracks the usability status with Green/Yellow/Red cards

Guard Doors - The upper and lower doors must be closed when operating the machine. They prevent accidental contact with the blade as well as contain the majority of the blade when the blade brakes or comes off the drive wheels. Simply pull them open, do not try to unscrew the knobs.

Table - Precision ground to be flat, your workpiece should always have one flat surface against the table at all times.

Throat Plate - Provides a means for replaceable, small-clearance inserts to support the material near the blade.

Blade Guard - The blade guard should cover the portion of the blade between the upper drive wheel and the the workpiece. This prevents accidental contact with the blade and also provides an adjustable mounting point for the upper blade guides. The Blade Guard should be adjusted so it sits approximately 1/2" above the top of the workpiece.



Blade Guard Lock Knob - Found on the back of the upper housing. Before moving the blade guard this lock knob must be loosened to allow the Blade Guard to move vertically. Loosen it significantly to allow free movement of the Blade Guard along its entire travel. The knob must be locked back in place before cutting or the saw's vibrations will cause the Blade Guard to work its way downward over time, and may pinch against the workpiece in the middle of a cut.



Guide Blocks - The blocks on each side of the blade are designed to help prevent the blade from wandering over the length of a cut. They should be positioned as close to the blade as possible without touching the blade when the saw is idling. The front edge of the guide blocks should overlap as much of the blade as possible without contacting any part of the tooth profile. Be sure the teeth do not touch the guide blocks even when the blade is pushed backwards against the thrust bearing.



Thrust Bearing - The roller behind the blade helps the blade not get pushed off the back of the wheels during a cut. It is not designed to provide a lot of resistance, and care should be taken not to excessively push the blade against the bearing. It should sit approximately 1/32" behind the blade when the saw is idling.

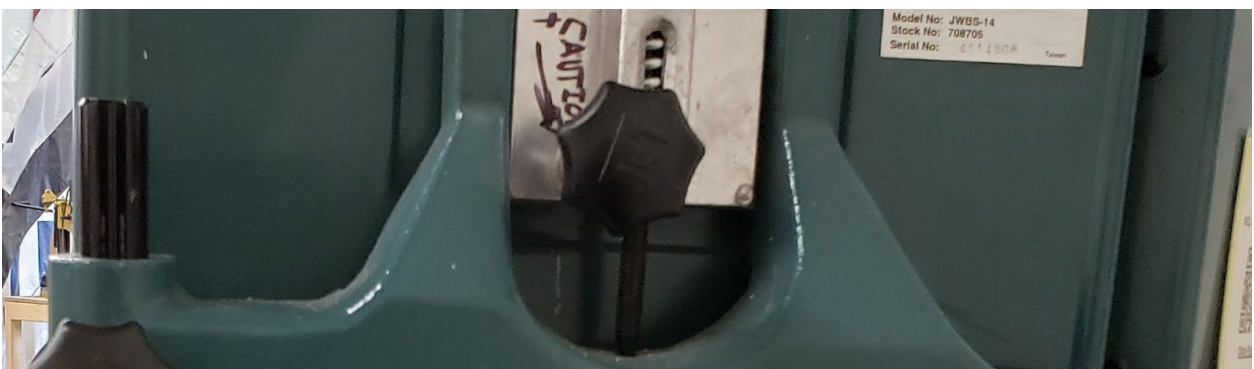


Lower Guide Block - Just below the throat plate sit the lower blade guides, consisting of two Guide Blocks and one Thrust Bearing.



Tension Knob - Found on top of the top housing, this knob adds or removes tension from the blade. This should not be adjusted unless advanced training has been acquired.

Blade Tracking Knob - Found on the back of the saw, this knob tilts the top wheel forward and backward in order to adjust where on the wheel the blade rides. The blade should ride in the middle of the wheel. Only small adjustments should be made to the tracking, and should be made only when spinning the top wheel by hand, not powered by the motor. The guide blocks and thrust bearing will need to be readjusted after changing the tracking.



Tool Safety

COMMON HAZARDS

The most immediate hazard of the bandsaw are contact with the blade. Care should be taken to keep your hands out of the path of the blade. Plan for the end of the cut and how you will maneuver the trailing end of the workpiece past the blade as you finish the cut. Use a push stick when your fingers would have to get within 6" of the blade.

Every blade has the potential to fail catastrophically. If the blade does break during operation, you will hear a loud POP. The blade may stop moving but remain embedded in the workpiece, or the blade may be pulled into the housing. In the worst scenario the broken blade will get caught on the lower drive wheel and start thrashing around inside the lower housing. In any of these scenarios, immediately hit the off button and step away from the machine until everything has stopped. If it is unsafe to access the stop button, just step away from the machine. Unplug it if you can access the plug, or find the appropriate breaker to disconnect power to the machine. Alert a staff member and report a maintenance report.

PROHIBITED MATERIALS

Reclaimed wood often has embedded nails or screws which can damage the blade, cause the workpiece to kick, and can scratch the table. All reclaimed wood should be checked with the hand-held metal detector before being resawn.

Reclaimed materials may be painted with lead paints. Lead paints are prohibited in the shop as the dust created is toxic.

No metals shall be cut on the resaw bandsaw.

Material that is not thick enough to engage with two full blade teeth should not be used. Thin wood can slip deeply into the gullet of a tooth, creating a rigid floor that the next tooth will slam down onto, causing tooth breakage. Once one tooth of the saw is broken, it creates a larger gap that wood can slip into, and the rest of the teeth will break off in short order.

Initial Setup

SETUP CHECKLIST

Make sure the blade tension is properly set, and the tension handle is locked into the 11 o'clock position.

Spin the top wheel by hand and check that the blade is tracking in the middle of the wheel.

Adjust the height of the blade guard. Be sure to unlock and relock it.

Adjust the guide bearings and thrust bearings.

Make sure you have appropriate roller stands set up if needed.

Make sure you have a push stick if needed.

SETUP BREAKDOWN

1. Open the top blade guard door. Spin the top wheel by hand, being careful not to touch the blade or get your fingers caught between the blade and the wheel. Watch where the blade rides on the wheel. If it does not ride in the middle of the wheel, the blade tracking knob will need to be used to realign the tracking of the blade. Do do so, loosen the lock nut on the knob and SLOWLY turn the knob while continuing to spin the top drive wheel. After making a small adjustment, continue to spin the wheel until the blade settles into it's new position. Repeat this process until the blade is tracking properly. It may be necessary to move the thrust bearings backwards if they are preventing the blade from moving backwards while adjusting the tracking. Lock the tracking knob's nut back in place and close the top guard door.
2. Loosen the blade guard knob to allow the blade guard to move freely. Use the blade guard crank to raise or lower the blade guard. It should be positioned so that it sits approximately $\frac{1}{4}$ " above the highest part of the workpiece as it passes below the guide. The goal is to prevent your fingers from getting between the blade guard and the top of the workpiece while still allowing the workpiece to pass freely below the blade guard. Once the blade guard is positioned correctly, lock it back in place.
3. Adjust the guide bearings so that there is only a paper's thickness of space between the blade and the bearings when the blade is idling. The bearings should not spin when not

making a cut, but should be positioned closely so that when sideways pressure is put on the blade the guides will be there to prevent bowing of the blade. Similarly the thrust bearing should be a small distance away from the back of the blade, allowing the natural tension between the wheels to provide most of the forward cutting pressure. The thrust bearing should be close enough to prevent the blade from being pushed backwards on the drive wheels, but ideally should not be forcing the blade through the cut.

4. If making a long cut (one where more than half the workpiece will hang off the back of the table when finishing the cut), an outfeed roller stand should be positioned to help support the weight of the workpiece as it exits the saw. Positioning the roller stand at exactly the same height as the table is ideal, but slightly lower is better than slightly higher, allowing for a smooth exit without any hang-ups.

5. Have a push-stick at hand so that as you approach the end of the cut you can quickly pick it up and push the workpiece past the blade without stopping the operation or fumbling around at a critical moment.

CONSUMABLES

The blade is the shop's responsibility, but should be inspected each time you use the machine. Check to make sure there is not excessive pitch build-up, broken teeth, or cracks in the blade. Report any problems via a maintenance request.

Users may wish to bring in their own saw blades, but should receive additional training in how to safely remove and install saw blades.

Basic Operation

OPERATION CHECKLIST

1.
Open dust gate
2.
Power on Dust Collection
3.
Adjust the fence to the appropriate cut thickness if needed.
4.
Position the workpiece on the table.
5.
Turn on the machine.
6.
Begin the cut.
7.
Feed the workpiece through the cut.
8.
Finish the cut.
9.
Turn off the machine.

OPERATION BREAKDOWN

Open dust gate

Power on Dust Collection

Adjust the fence

If using a fence to help create a uniform cut thickness, set it's position now.

Position the workpiece

Place the workpiece flat against the table a few inches in front of the blade, and firmly against the fence if needed.

Turn on the machine.

Start the cut.

Gently bring the workpiece into contact with the blade.

Feed through the cut

With firm, constant pressure, feed the workpiece past the blade, allowing the blade to cut away the material without excessive forward pressure. Let the machine do the work.

Finish the cut

As you approach the end of the cut, use a push-stick to feed the workpiece completely past the blade without endangering your fingers. Maintain sideways pressure against the fence for as long as possible, but do not pinch the blade between the two sides of the cut. Push the pieces completely past the blade, making sure not to leave any part of the workpiece trapped between the blade and the fence if using.

Turn off the machine

Push the off button and allow the blade to come to a complete stop. The workpiece may be removed from the table with care while the blade is coming to a stop, but care should be taken to avoid contact with the blade. Small pieces should not be fished out with your hand from near the blade.

If the blade needs to be stopped quickly, a sacrificial piece of wood can be fed into the blade in order to provide stopping friction by cutting.

Cleanup

CLEANUP CHECKLIST

Brush the sawdust off of the machine surfaces

Vacuum dust out of the fence guide rail, bottom guide structure, and bottom housing.

Sweep the floor surrounding the bandsaw.

Check the dust collection drum and recruit help in emptying it in the dumpster if it has reached the seam in the middle. Make sure to retain the rubber gasket.

Note any maintenance needs or concerns on the tag and at protohaven.org/maintenance

Dispose of small cutoffs in the trash, and place any large, project-usable scrap in the scrap bin.

SCRAP BREAKDOWN

There is a large black scrap bin at the back of the shop. Maintaining this is a shared, communal responsibility.

When you notice the scrap bins are full, sort through the items and clean out the least usable items. We generate more scrap than we use, so please throw away anything that is questionable, or requires processing (removal of nails, disassembly, etc).

Troubleshooting

Common Issues	Possible Causes	Resolutions
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<p>Blade pulls to one side or the other during a cut</p>	<p>Blade tracking is bad.</p> <p>Fence is not aligned to the blade</p> <p>Blade is dull</p>	<p>Adjusting the blade tracking forward or backward on the wheel can slightly change the tilt of the blade with relation to the table.</p> <p>The fence may have been knocked out of true with the table. Using an appropriate allen wrench the fence can be adjusted a few degrees to the left and right to help correct for blade drift.</p> <p>Bolting a resaw bar to the fence allows the user to feed at virtually any angle.</p> <p>A blade that pulls badly to one side or the other may need to be replaced.</p>
<p>The saw 'chirps' when running.</p>	<p>A guide or thrust bearing that is worn out will make rattling and chirping sounds</p>	<p>This is mostly benign, but is an indication that the bearings should be replaced. Check the maintenance logs to see if the noise has been reported yet.</p>
<p>There is a grinding sound when the blade is moving</p>	<p>The blade is scraping against part of the saw housing.</p> <p>The top wheel is scraping against part of the saw housing.</p>	<p>Check the blade tracking to see if it has crept backwards past the back edge of the wheel.</p> <p>Check the top and bottom edges of the wheel to see if it is scraping against the housing.</p>
<p>The saw blade vibrates back and forth when idling</p>	<p>Insufficient blade tension</p>	<p>Adding some blade tension can reduce blade flutter. Be cautious and do not adjust blade tension without proper training.</p>

Special Setups

It will be necessary to use a sled or v-block of some sort in order to safely feed round stock lengthwise through the bandsaw.

Additional Resources

Wood Magazine - How to resaw lumber (resaw technique)

<https://www.youtube.com/watch?v=hgTpsGDRRRo>

Band Saw Clinic with Alex Snodgrass - (blade setup)

<https://www.youtube.com/watch?v=wGbZqWac0jU>

AmericanWoodworker - The Flutter Test (blade tensioning)

<https://www.youtube.com/watch?v=z8zZuDosSy0>

Matt Estlea's Guide to Setting up a bandsaw (comprehensive setup)

<https://www.youtube.com/watch?v=ugc85kJmos8>

Revision #3

Created 15 January 2026 15:20:45 by Bookstack Admin

Updated 1 June 2026 18:48:07 by Manager Scott Martin