



# Tuning Your Bandsaw

Roy Holmberg

Adapted from his demonstration June 18, 2022

Santa Cruz Woodturners

Secondary contributions and photos by Wells Shoemaker

# About Roy

- Machinist in the Navy
- Licensed landscape architect
- In charge of outdoor public works in SC for 20 years
- Past Chair of Open Studios Committee
- Artisanal Blacksmith
- Turner for decades
- Ceramicist
- BBQ Expert
- VP of Santa Cruz Woodturners
- Harley Rider



# Hardly a Davidson



Roy Holmberg, Golden Bear Award, California State Fair



# AAW Honoree for This Masterpiece



One of 18 works juried for national display annual symposium 2021

# We'll be using Roy's shop-made 4X life-size model to illustrate

This teaching model of the  
bandsaw guides makes it  
easier to see how that  
mysterious adjustment  
assembly works.

WS: By itself, this completely  
functional assembly is a  
machinist-turner's  
masterwork!

*Belongs in a museum!*



# We'll Describe 4 Key Adjustments For Smooth Runnings

1. Right, sharp blade with correct tension
2. Gullets in proper tracking position
3. Side guides aligned with proper clearance
4. Upper blade support bearing aligned



# But First: Safety Precautions Our Constant Companion



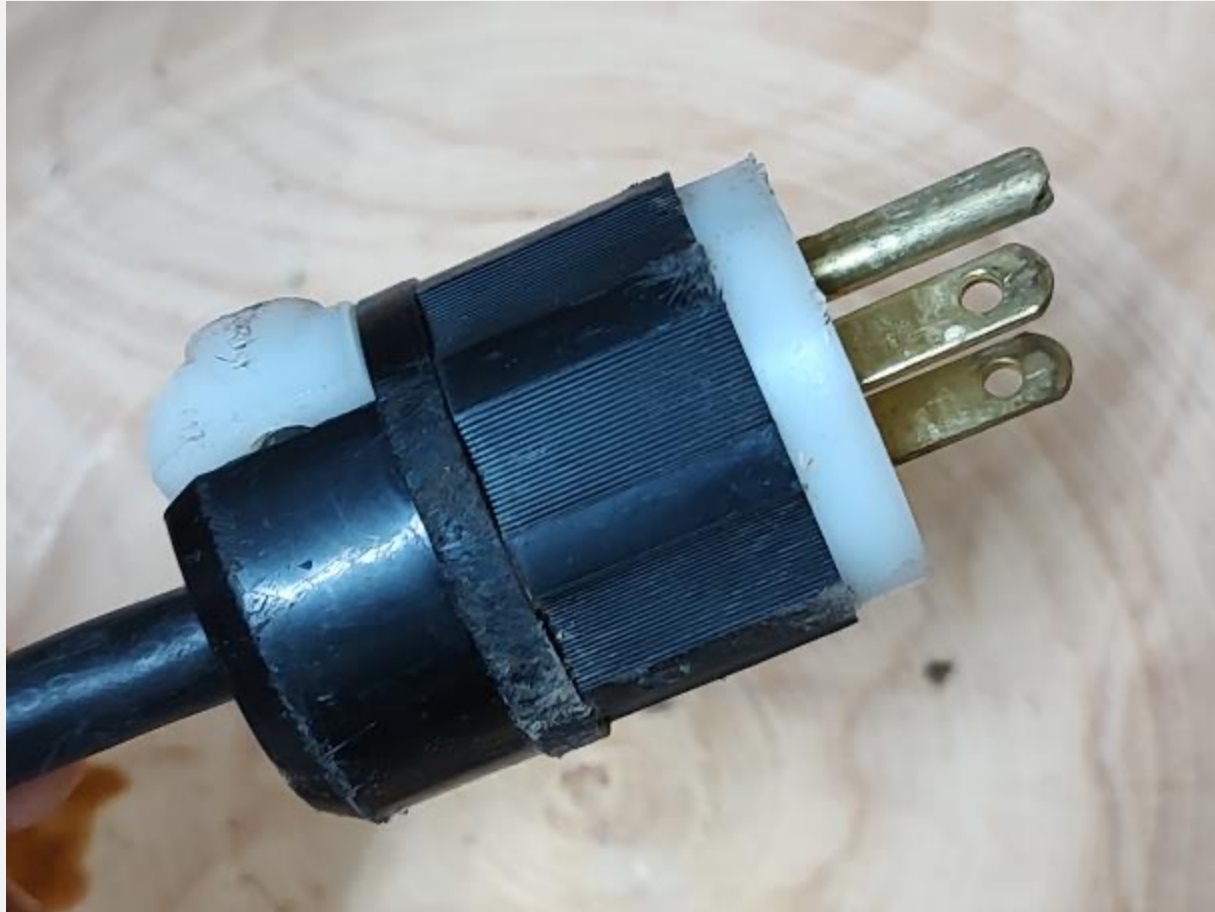
Bandsaw is a dangerous tool—even when you're merely adjusting it



(Bandsaws prefer fingers)

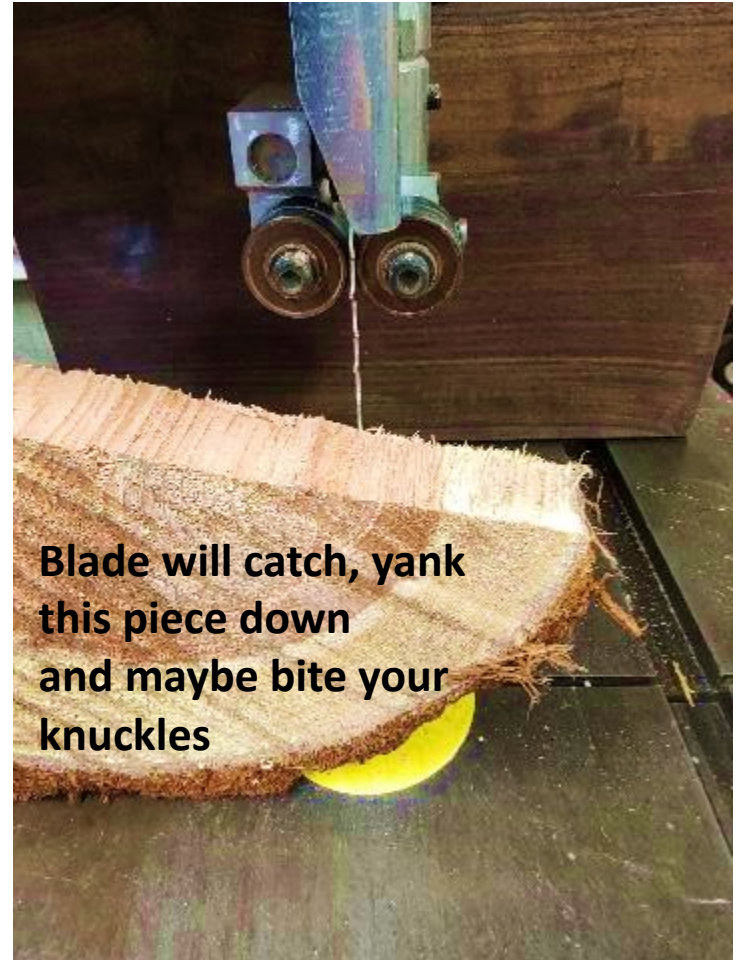


Unplug that finger eater before digging into the adjustments!



Older saws with exposed toggle or rocker switches can be “activated” unintentionally

# Blade Use Safety: No Unsupported Cuts!



# Minimize clearance between guides and work for safety and accuracy

*Yes*



1/4"-3/8"  
clearance

*No!*





# Mind your Finger Position

- Use a push stick if your fingers would come within an inch of the blade.
- Most injuries occur with abrupt movements as you near the end of your cut





# Do not give your saw the finger

- For any tool, excess pressure increases risk of injury, as sudden release of tension can jerk your hand into harm's lots faster than you can react
- Refine minor irregularities in your cut with sandpaper or a file, not a raggedy 3 TPI blade
- No matter how many years you have been using the bandsaw...remember it has an appetite



# Ominous Noises

- If your bandsaw starts making a regular “clacking” or “knocking” noise, TURN IT OFF and step back
- That’s often the sign of either a bent blade or impending failure of the weld
- Don’t restart until you find out why! A broken blade can behave unpredictably...and bite you
- When in doubt, change out the blade!
- Steady, loud noisy running, especially if it develops while cutting wet wood, can be a sign the blade and tire are gummed up and chafing the guides

# Safety Alert for a Stalled Blade

- If your blade gets wedged and stalls...but the motor switch is still on...*Beware!*
- Turn it OFF!
- Don't try to fiddle with it to get it going again. The blade can kick back into motion unpredictably!

# Blade Handling Safety

- New blades come coiled into 3 loops. Even when it's not running, that blade can hurt you! When restraining wires are released, it can spring wildly.
- Use tough gloves & face shield handling a blade. Always.
- You can toss the coil onto the ground outside to pop open ...funky but safe...or do it in a skilled, controlled way in the shop
- Dispose of used blades safely re-coiled and wired together

*WS: This is what happened to me when a new bandsaw blade "sproinged" open in the shop on a rainy day → unintended "3 TPI" slash on a finished bowl in harm's way. Better than an eye...*

*(It's now the "Ellipsis Bowl" ...)*



Monterey  
Cypress  
Lidded Bowl  
WS, 2020



# Practical Hint: Don't push so hard that the motor slows

- Cutting is vastly less efficient when excessive load or binding with a wobbly work piece leads the motor to grind down to low RPM. Go slower, or get a new, sharp blade, but **don't** try to wrestle your work through!
- Not only does the motor draw excessive current at low RPM, but it overheats and may stall or ruin windings. (Sue Broadston commented about EMF...she teaches physics of electricity! Keep it purring at full RPM!)
- Many bandsaws come with a ½ hp, 110V motor, which is OK for light duty. If it slows down frequently for your demands, upgrade with a higher horsepower motor, re-wire to 220V, or both. Get help from a pro if you're not comfortable with these changes!

# Now We're Ready to Civilize this Metal Contraption!



# Roy's Shop-made 4X model



# Roy's comments on the model

- This model was based on the Delta 14" bandsaw, probably the most widely purchased model in USA
- The adjustments include steel blocks for the side guides
- Some saws use roller guides instead of blocks for side guides. Examples: Carter other makes (slide #34)
- The instructions may differ for saws of different sizes and makes...but the principles are the same
- Read the manual! Usually easy to download from web
- If these adjustments are new or confusing, ask an experienced craftsman for some help, and watch the Snodgrass video (link at the end of this display)



# Here We Go: The 4 Adjustments

1. Sharp blade w correct tension
2. Gullets in proper tracking position
3. Side Guides aligned
4. Upper blade support bearing aligned



# The Blade

*Drift—“Won’t cut parallel to the fence”*

- Principal cause for blade “drift” is a dull blade, not misaligned guides. Problem with re-sawing
- New blades cost \$20-30. Worth it.
- Sharpening blades tedious, difficult to do well. It usually reduces the “set,” resulting in narrowed kerf and binding. That’s false economy for most users
- If the blade is sharp...it will cut! Any time an operator needs to apply pressure, on lathe or saw, it usually means **DULL steel**. Stay Sharp! \*
- Accidents are more likely with forcing any tool

# Buy the Right Blade

- For moist or wet wood, need widely spaced teeth to clear sticky chips
- 2-3 TPI, Skip tooth design, wide set
- >2, ideally >3, teeth in contact with wood as typical for bowl blanks—
  - *Use a different, blade with more TPI for thin scroll work and metal. May also need refinement of guide structures for narrow blades...out of scope for this presentation*
- 3/8" or 1/2" width for turner's usual needs, e.g. cutting circular blanks
- Won't make a silky smooth cut, but resists clog, bind, and stall!



Craft Supply's favored blade for turners<sub>23</sub>  
cutting green wood

# See Gullets... and the drive wheel

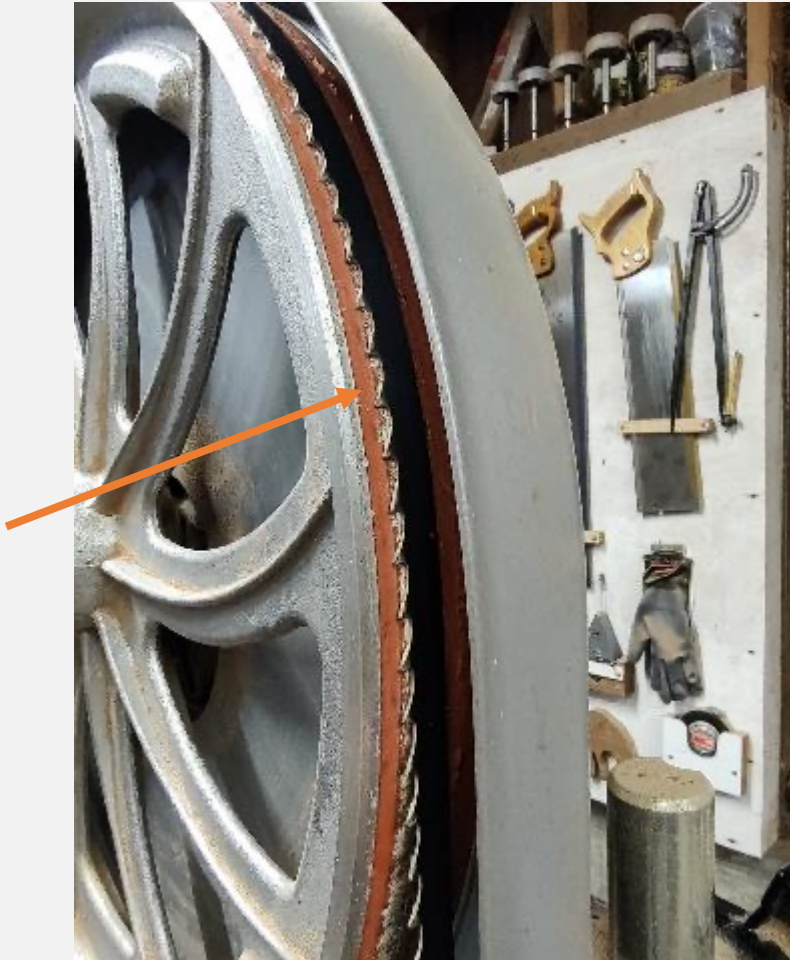
- Gullets come in different designs
- Moist wood should have deep gullets to avoid packing and binding (hook tooth)
- Placement of the gullet on the tire is important (see #24 below!)



# Gullet Position on the Tire

**Wrong!**

**Why?**



- *Gullets* should be centered on tire
- This blade is set way too far forward
- Also, check tension setting...not always exact. (See slide #27)



# Gunge on the Tire

- Wet or moist wood, esp conifers and oak, can release sticky sap that sticks to the rubber tire and blade.
- Use dust evacuation port and regularly clean out the sawdust from inside the drive cabinet
- New tires are relatively inexpensive
- *John Wells comment: Use a beveled block of hard wood to scrape sticky debris while turning the wheel by hand w blade removed from wheel*



Impaired driver—Tire still gungy *after* scrape and brush! Also note wrong position.

# Tension and Tilt Adjustments

Behind the  
saw



Shaft of  
tensioning  
knob

Blade tilt screw

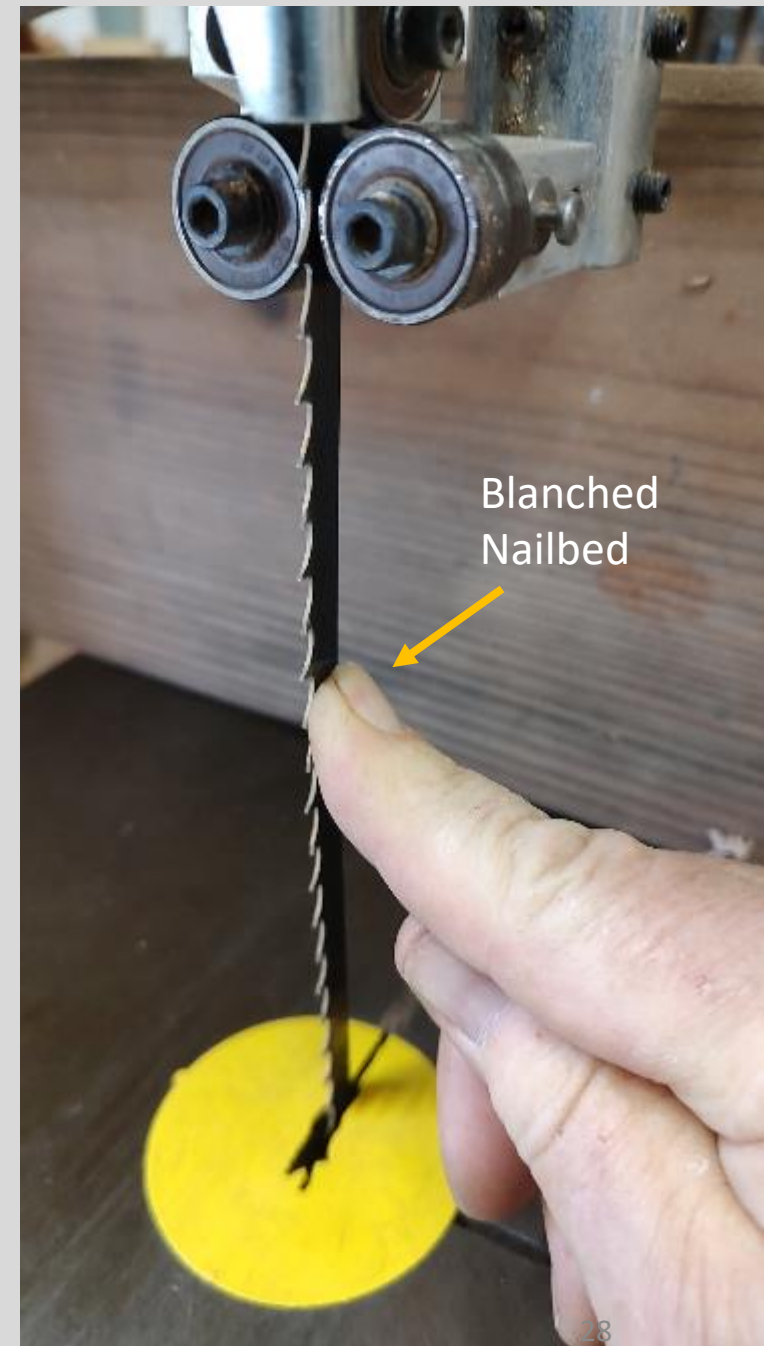
Blade tension  
Indicator is  
usually close, but  
maybe not exact.  
(Springs get tired)

“Trust but verify”

Locking wing nut

# The Finger Test For proper tension

- Turn motor OFF
- Elevate upper guides to full “up” position...about 6” clearance to table
- Press finger fairly hard sideways against blade
- Should yield about 1/8 – 1/4” flex





# The Flutter Test

## THE "FLUTTER TEST" FOR PROPER SILICON STEEL TENSIONING:

1. Remove guides -- you CAN NOT run this test if the band saw blade is restricted in any lateral movement.
2. Make sure tire surfaces are in good condition -- they cannot be hard, flattened out, cracked or brittle.
3. Mount the blade on the machine and apply the tension to the band that the manuf. recommends for other steels.
4. Close all covers for safety purposes.
5. Start the machine; engage the clutch into the high speed mode. NOTE: You will not be cutting any wood.
6. Stand at the head of the machine, with your hand on the turn screw tensioner and your eyes on the band saw blade. Very slowly start de-tensioning by half turns at a time, keeping your eye on the band saw blade. The object is to bring the tension of the blade down to the point the blade starts to "flutter". TAKE YOUR TIME. \*The "flutter" we speak of is a continuous ¼" side to side movement, not just a vibration.
7. When you see the band start to "flutter", you have hit ground "ZERO". Now start ADDING quarter turns of tension, VERY SLOWLY, until the band stops fluttering (Only see one blade instead of two) and is running stable (straight) again. At this point ADD one more quarter turn of tension. Note: The blade may vibrate or move at this point but make no more changes.
8. You have now tensioned our blade correctly. Shut off the machine and put your guides back in place. You are now ready to start sawing.
9. ALWAYS DETENTION YOUR BAND SAW BLADES when you have finished cutting for the day.

1. WS: This would be smart for high stakes work, i.e. resawing thick, expensive wood
2. See link to Carter video in Appendix at end. Hard to do this with your intuition.
3. I bet most of us do not follow the ALL-CAPS admonition #9 above...although, unless the blade were naughty, I'd suggest detension rather than detention

# Wheel Tilt



- Bandsaws have a wheel tilt adjustment screw in the back...near the tensioning adjustment.
- See photo slide #27
- Center the gullets on the wheel, adjusting  $\frac{1}{4}$  turn at a time
- Run machine to allow blade to adjust to modified position
- Turning of the Screw
  - Left (counterclockwise) moves blade to back,
  - Right (clockwise) to the front



Guides—here  
we come!

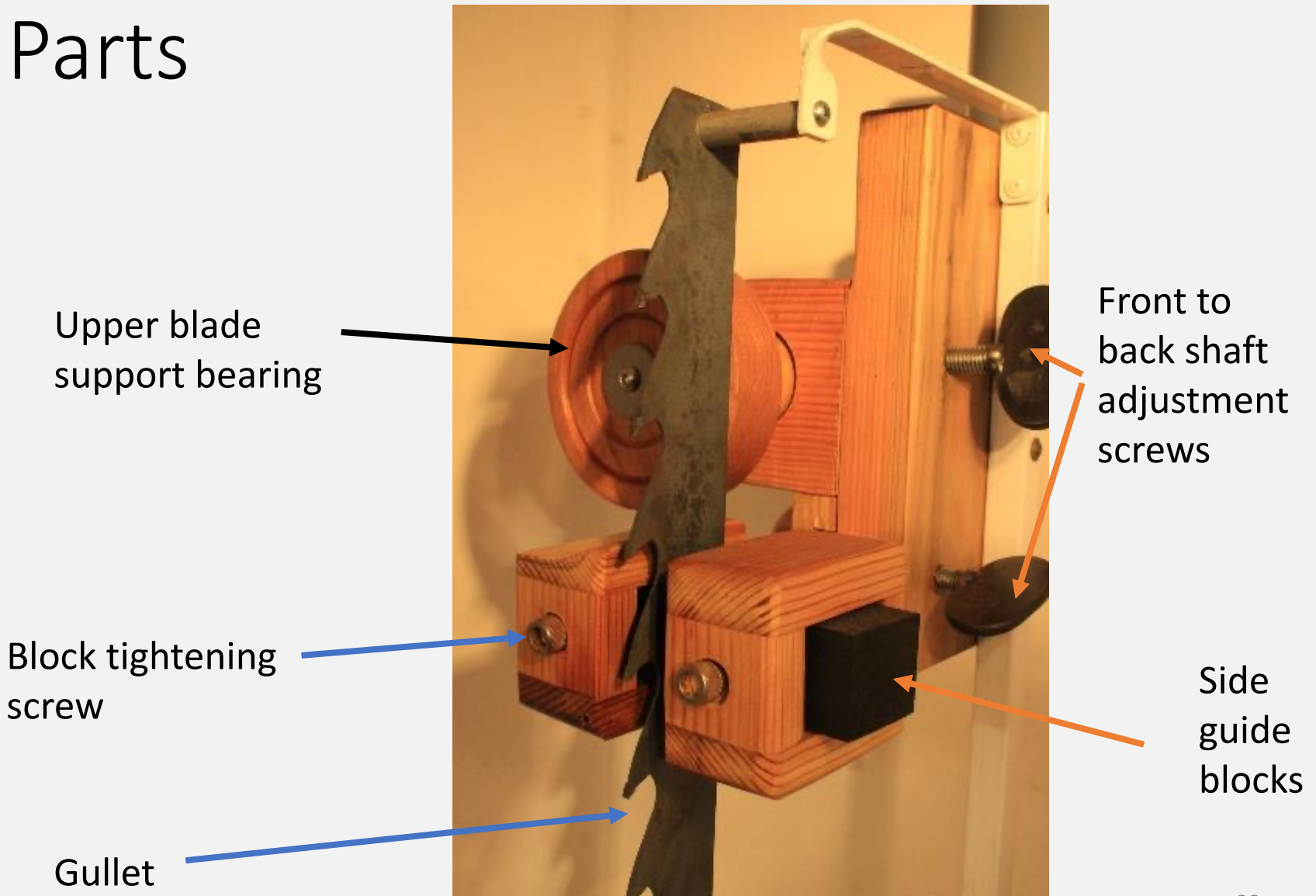
Every moving  
part has a  
purpose



We'll  
make them  
purr



# Name the Parts

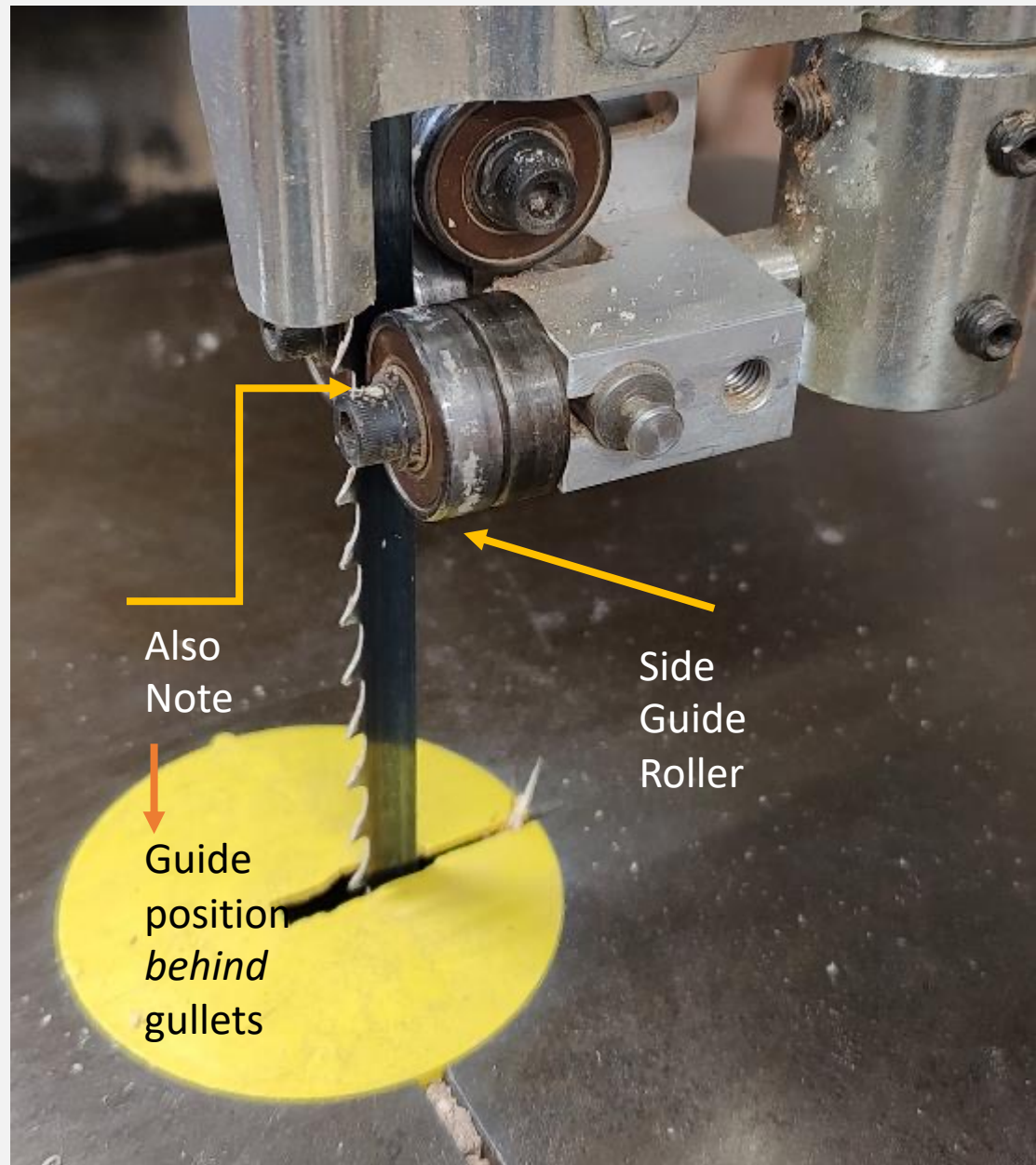


# Roller Guides

Roller bearings  
instead of blocks for  
side guides

Fairly common  
upgrade over the  
more common solid  
side guide blocks

Adjustment  
philosophy the  
same



# First Steps

## When Installing a New Blade

- Back off all the guides so that blade runs freely
- Apply moderate tension
- Adjust tilt so *gullets* run in center of the wheel
- Adjust upper blade support bearing and side guides so they just clear the blade (see also slides #40 & 41)
- Guides should NOT have contact with blade at rest. Clearance about the proverbial \$100 feeler gauge (0.0043 inch). Cheaper gauges available for \$1 and \$5
- If blade “scrapes” the blocks or turns the bearings (Carter) when turning without load—you’ll overheat and shorten life of blade and guides



# Loosen the upper support bearing shaft

Shaft for  
upper blade  
support guide

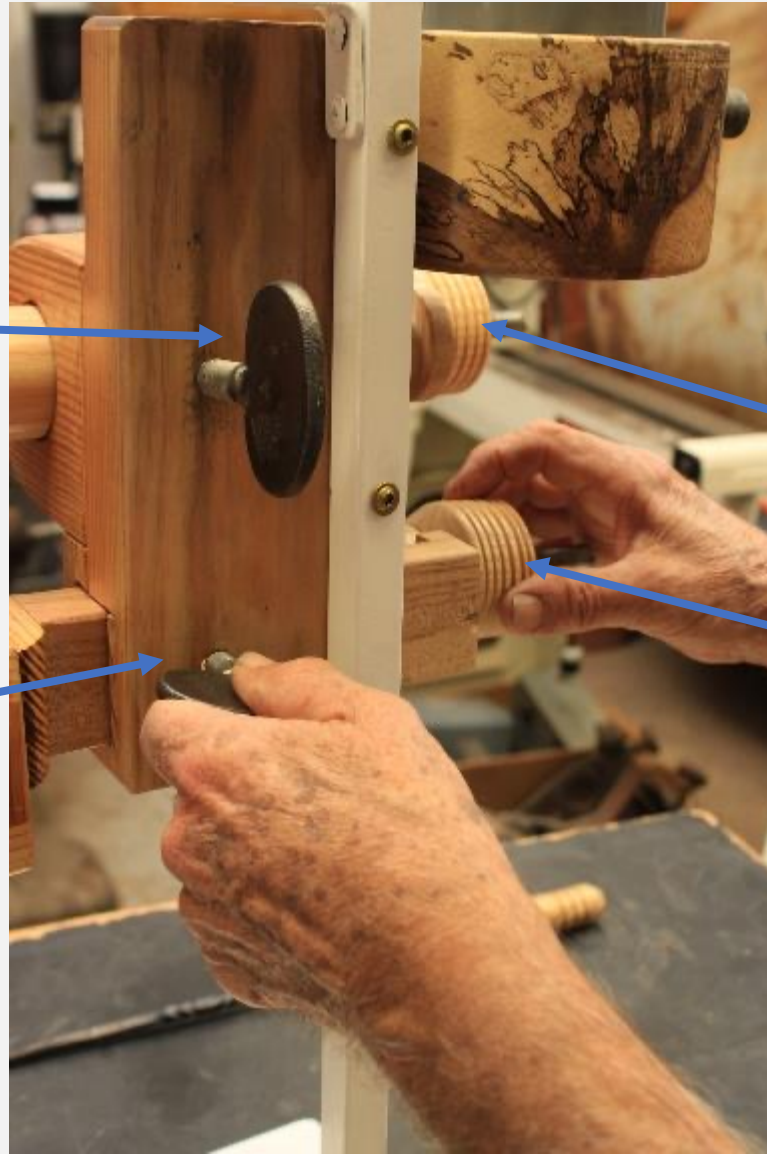
Shaft lock  
screw



# Loosen the side guide shaft

Shaft lock  
for upper  
blade  
support  
bearing

Shaft lock  
for side guide  
blocks



Adjustment  
knobs

Upper blade  
support  
bearing

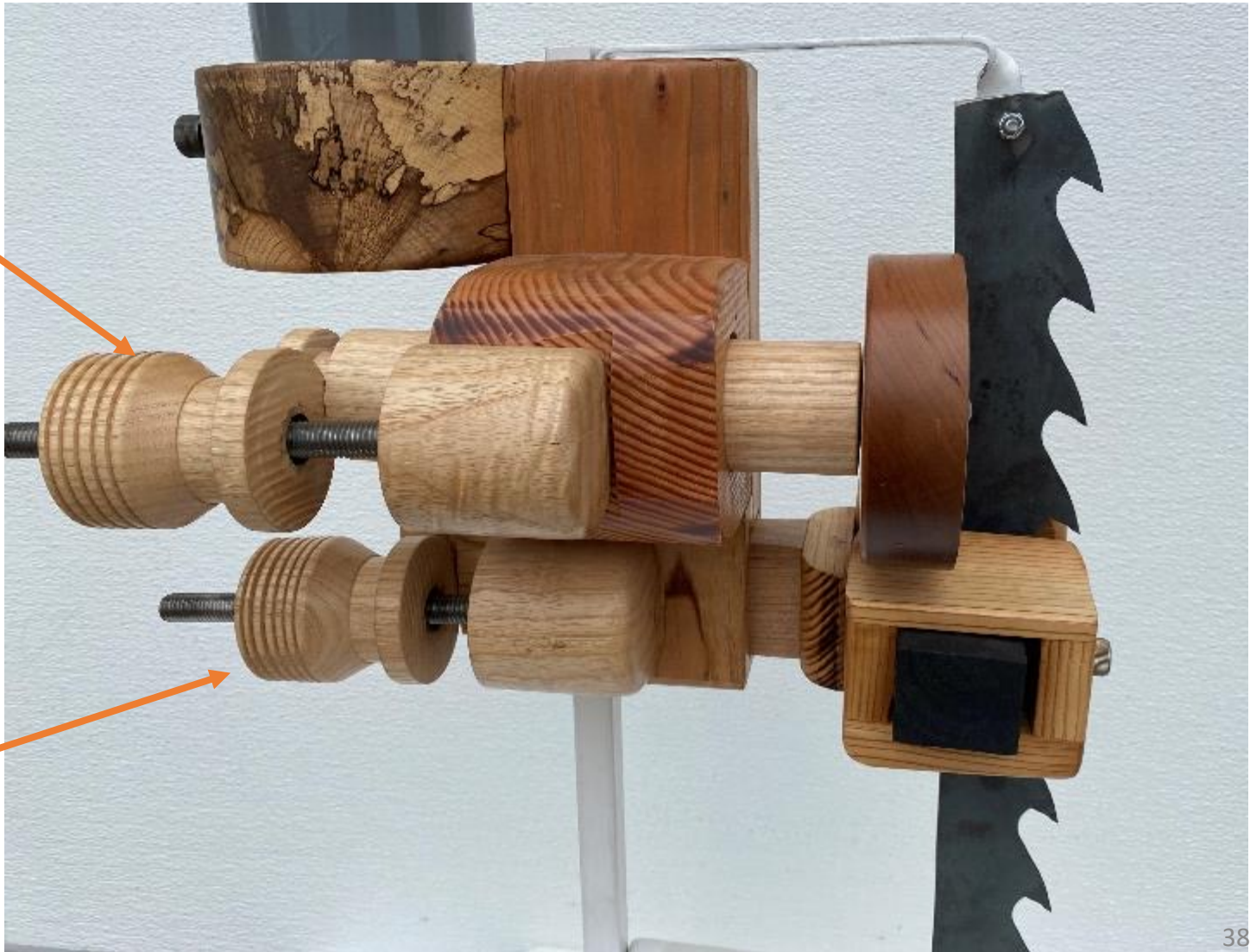
Side guide

# View from other side: Detail adjustment knobs in back

Back  
Roller  
Guide  
Adjust

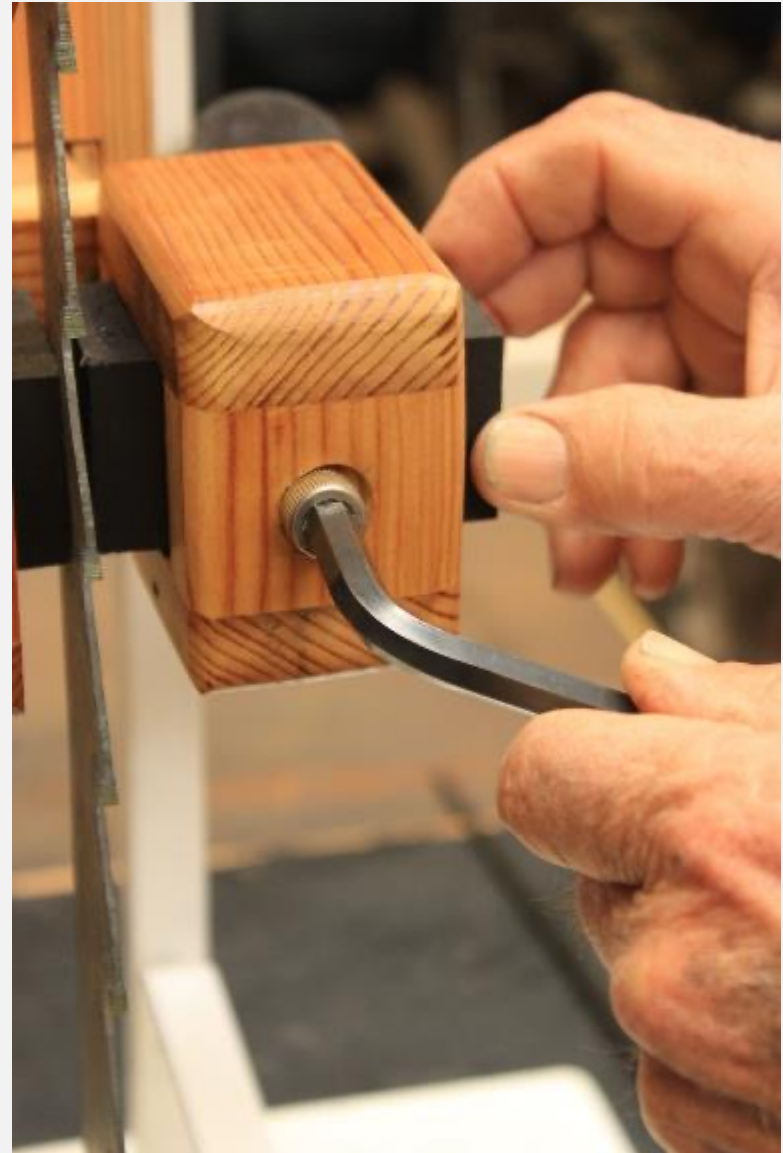
Can make  
Fraction of  
millimeter  
fine  
movement

Front  
guide  
blocks  
adjust



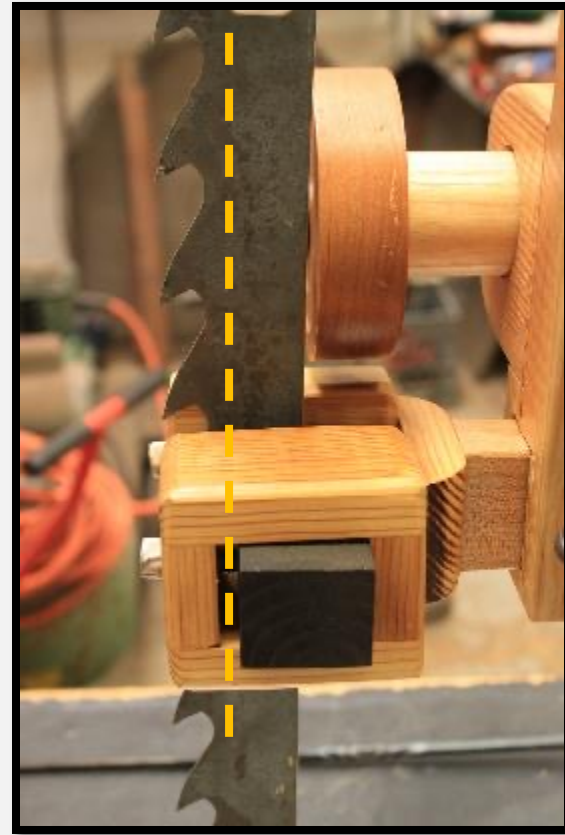
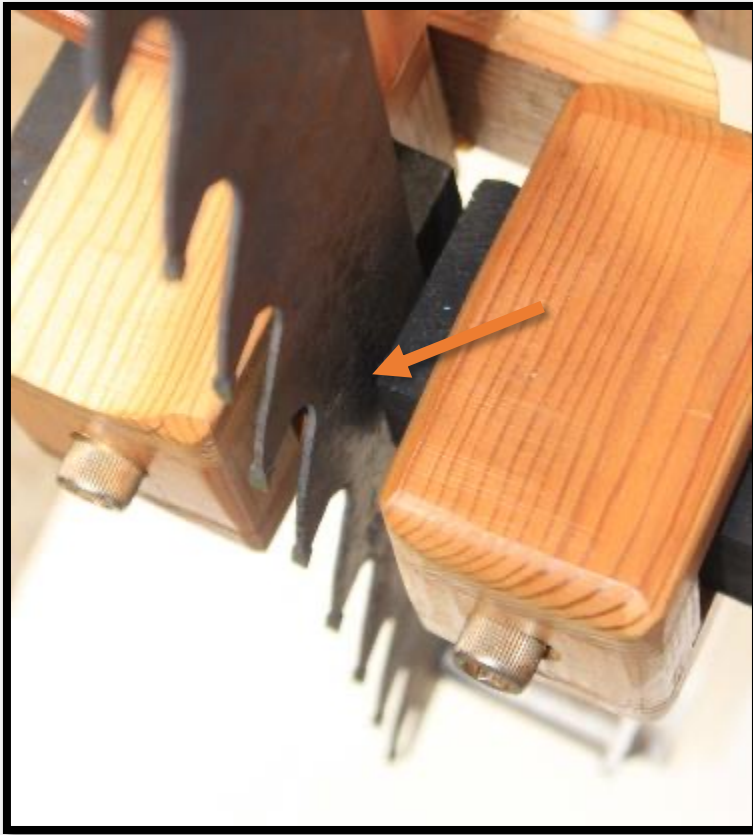
# Mobilize Blocks

Loosen side  
guide block  
adjustment  
screws both  
sides





Position side guide blocks just behind the gullets!



Set guide clearance 0.004 inch  
(About 0.1 mm—just enough for light to pass)

Upper blade support bearing



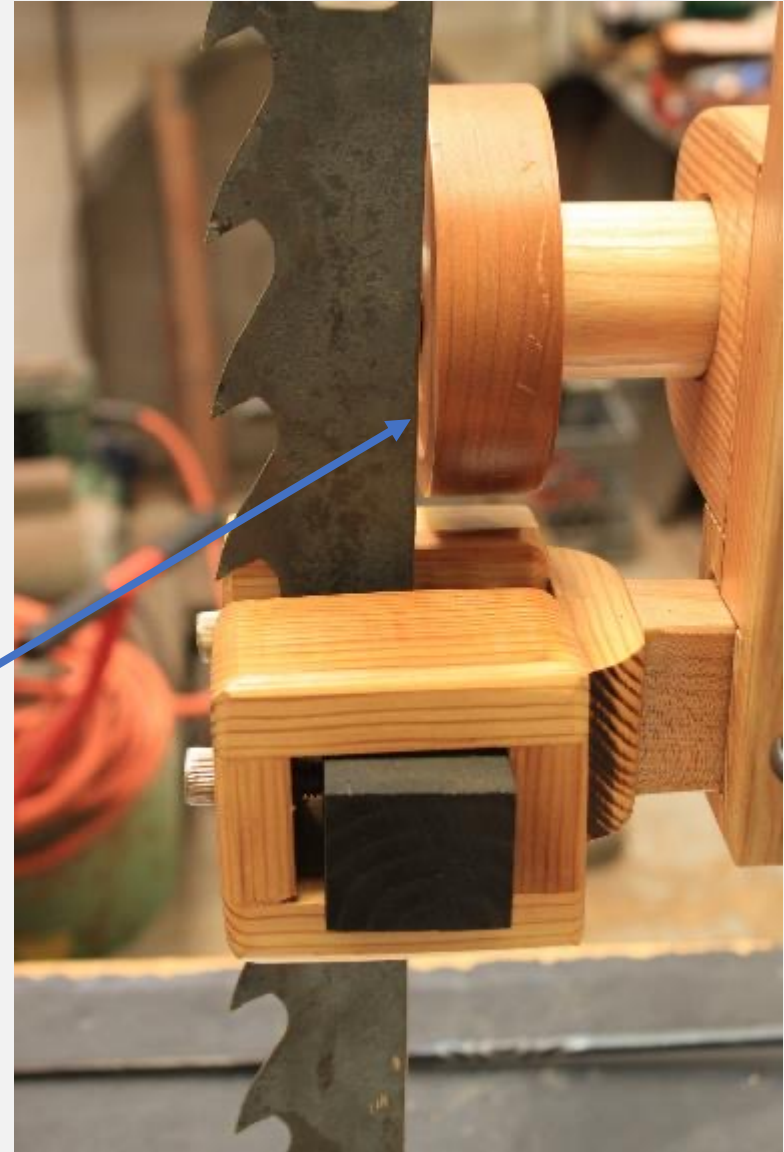
Side guide block



The \$100 feeler gauge. Cheaper ones available...

This is the idea  
for clearance

Restrict unwanted  
movement under  
load (cutting), but  
don't chafe when  
running free



# Under the Table Guides

- These need adjusting and cleaning at the same time
- These are harder to reach than the upper ones
- Same steps as the easier ones above





# It's not hard to remove the table!

- Two trammel bolts come off in 30 seconds
- The table can be removed for easy access to those guides
- For many turners, “it’s been a while” since you were down there
- Less dangerous to work with table off...easier to get precise adjustments



# *Done!* Tighten the Adjustment Screws

- Check for free movement of blade
- Verify no strange noises!
- Do a test cut







We're not quite Finished

▶ Set the table...

Roy's Forge  
Work



# Table Adjustments

## Key issue for Re-sawing

### Maybe less for rough blank cutting

- Remember that a dull blade is usually the cause of drift...not a crooked table.
- If blade is good, it can be a remediable table error if an older, poorly maintained, or traumatized saw has blade running **non-parallel** to the miter slot or the fence. (see slide #51)
- Watch a video before you tackle these adjustments ...or ask for help
  - *[Link at the end of presentation](#)*



# Table Adjustment: Square

Using engineer's square, or the best you have, verify that table is perpendicular to blade.

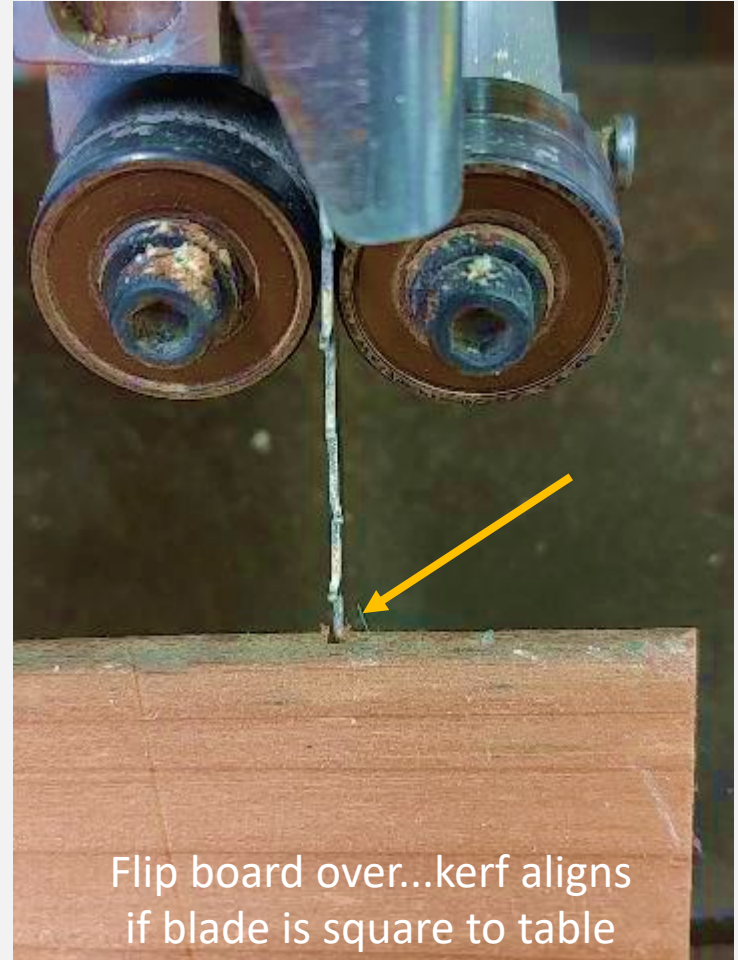
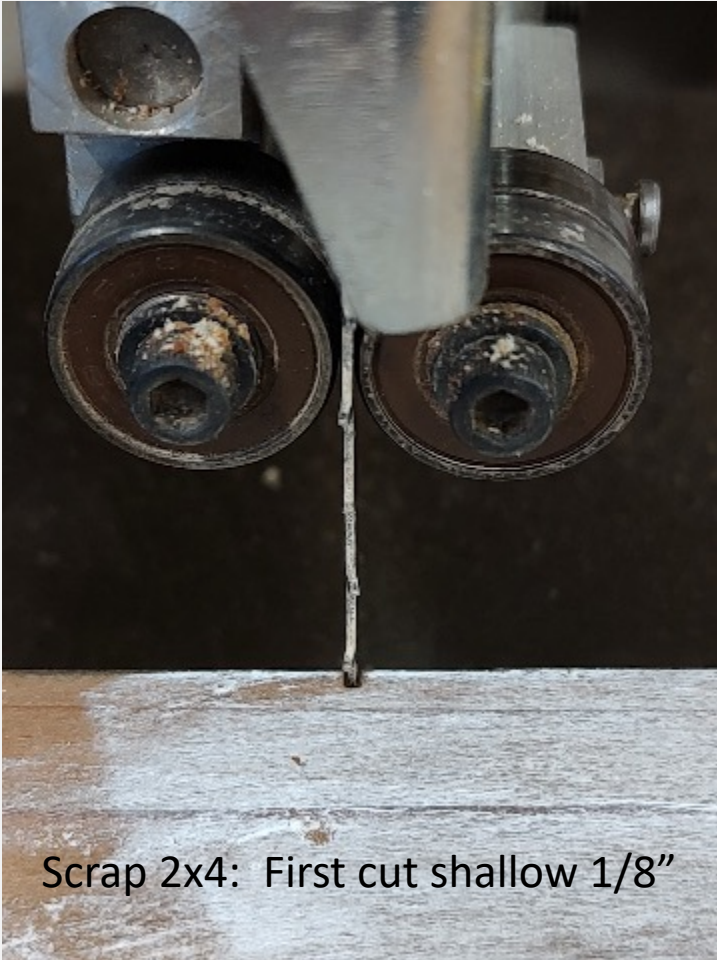
This example...not good!

Vibration can be a culprit

Verify before any high stakes cutting job...and snug attachment knobs



# Another Way to Check for Square Flip The Board Trick





# Heavy weight on small table can distort square if table attachment bolts loose



# Test for Parallel Fence (or Miter Slot): The Line Trick

- Joint the edge of a 1x4 scrap flat board—draw a line with straight edge parallel to the edge of the board

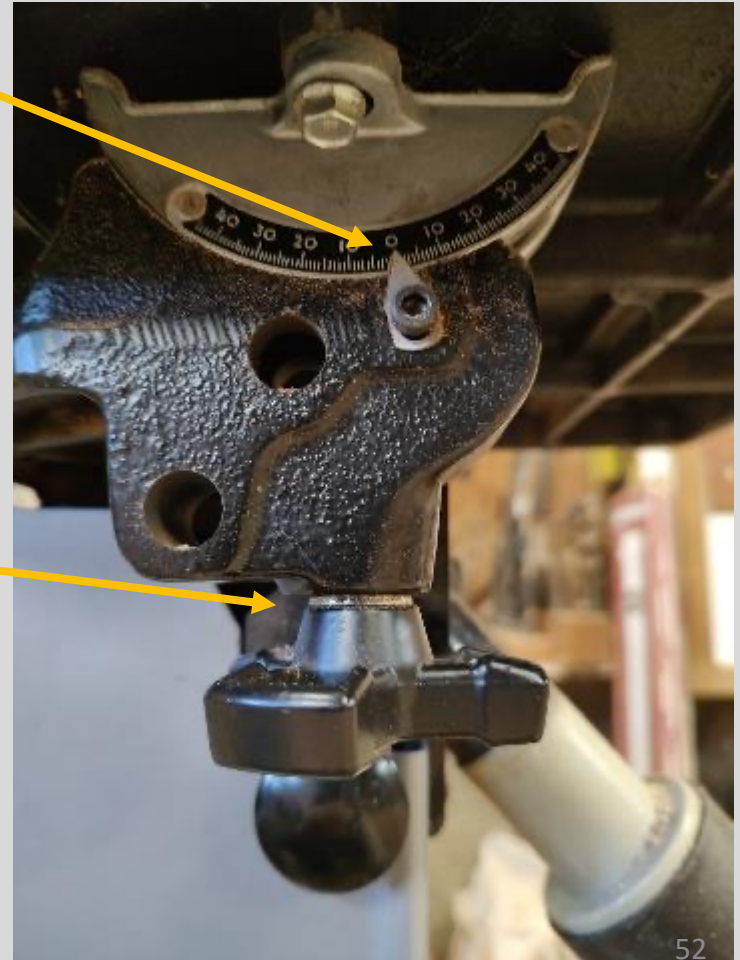


- Mark halfway point
- Feed freehand so saw cuts through line. Stop at halfway point, hold board still, and turn off saw
- Draw a crisp line on table along the edge of the board with soft pencil or fine marking pen
- That line should align with your fence
- Higher quality, after-market fences (Kreg, Grizzly) are available with ability to adjust to perfection...worth it if you're doing lots of re-sawing
- [Link to Snodgrass video at end of presentation](#)



# Table Adjustments: Underneath

- Table tilt dials can be off
- The perpendicular “stop” bolt (rear left under table) may be off. Easy to revise
- Table attachment fasteners (usually 2 stout trammel bolts) can be erroneously set or vibrate out of adjustment



# Table Care in a Foggy County

- Fog and salty ocean air is merciless on exposed steel
- Protect surface when not in use—wax or spray lube designed for machinery (not grease)
- Keep surface pristine with Klingspor block, Scotch-Brite pad, 4-0 steel wool, or fine abrasive
- Treat the miter slot, too. You don't want resistance or irregularities when your fingers are close to a blade used as a meat saw in a butcher shop

Just in case you  
get tired of  
fiddling with itsy  
bitsy screws...  
there are larger  
band saws out  
there with  
bigger bolts...  
same rules!





And...there  
are always  
other ways to  
get any job  
done





# Placeholder for web links

- Alex Snodgrass is the Deacon of Bandsaw Video
- You can Google “Alex Snodgrass Bandsaw” and get a selection of instructional You Tube sessions.
- Direct link to Roy’s recommended “best of” for tuning is this one→
- [Bandsaw Tuneup - YouTube](#)