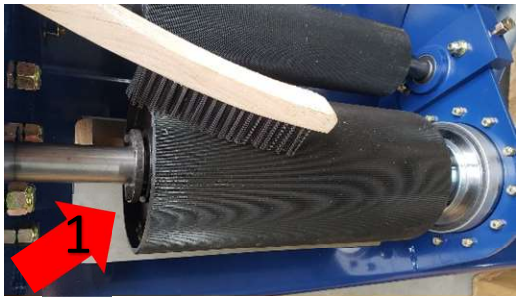
XL-Saw Calibration and Maintenance Instructions

End of Shift Cleaning

LEAD SCREW: Move Z-Axis to “Clean Position” and use a wire brush to clean off saw dust build up on lead screw, and spray with white lithium grease. Do not use excessive WD-40 near ACME nut, it can cause damage. Home Z-Axis and confirm it fully reaches hard stop.

OIL UPPER CARRIAGE: Drop a few drops of tool oil into the access TEE just before upper carriage ceram valve.

FEED ROLLERS: Spray with WD-40 and scrub with a wire brush, thoroughly clean all grooves. Inspect grooves and peaks for sharpness. Light cleaning during shift is suggested.



IDLE ROLLERS: Spin each of the (6) upper and lower idle rollers. Rollers should spin freely with no lateral play. Replace bearings if any resistance or play is found. Failing bearings can cause expensive shaft damage.

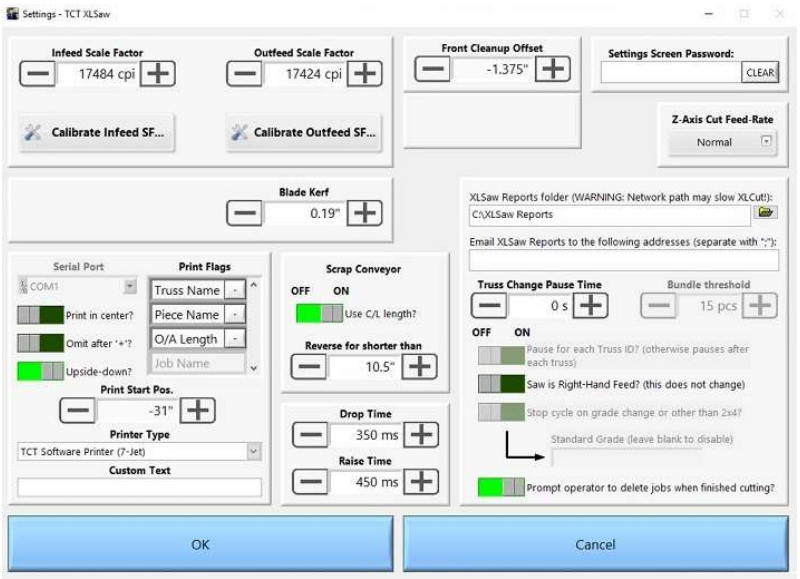
1) Check that taper locks in feed rollers are tight, have 2 bolts each, and that keyways are present with no play

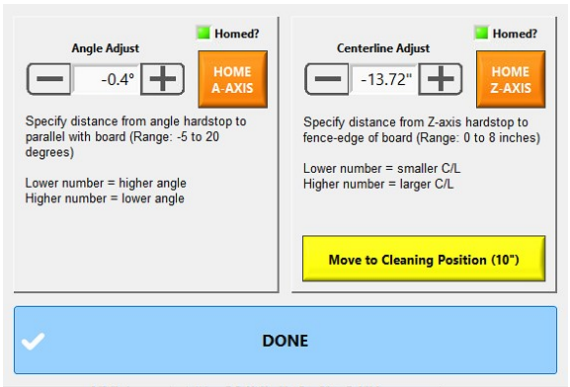
Note About Using This Guide

All the following steps must be followed **IN ORDER**. Failure to perform calibration steps in order will result in inaccurate calibration.

STEP 1: Adjusting Upper Clamp Hard Stops
STEP 2: Upper Idle Roller Hard Stops
STEP 3: ACME Lead Screw Nut Retainer Tension
STEP 4: ACME Lead Screw to Motor Connection (Lovejoy Coupling)
STEP 5: Lower Idle Roller Height
STEP 6: Fence Alignment
STEP 7 (L) or (R): Check Board Travel (Left or Right Hand Feed Machines)
STEP 8: Front Clean Up & 90 Degree
STEP 9: Blade Center of Pivot
STEP 10: Blade Vertical
STEP 11: Kerf Test
STEP 12: 100" Test (For Software without Calibration Wizard)
STEP 13: Stretch / Shrink Test
STEP 14: Centerline Test (Z-Axis Home Offset)
STEP 15: 30-150 Test
30-150 Test Variations for a LEFT Hand Machine
SERVICE UPDATE: Saw Height

Use care in recording results from each step. Retaining settings outside of the machines computer can assist in recalibration in the event of possible computer data-loss. Backing up your machines " .INI " file is recommended, however a screen shot or at minimum a photo of your settings screen can help minimize down time.

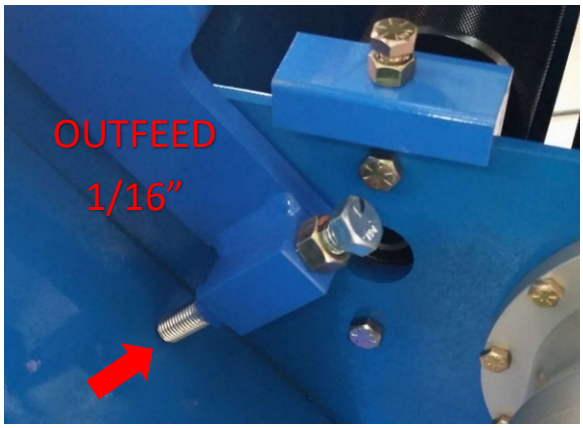




NOTE: When using calibrations files, there will most likely be a pop-up error that the "Kerf Does Not Match!". This can be disregarded for calibration files. Job files should have matching kerfs. Set proper kerf in the saw and the optimizer.

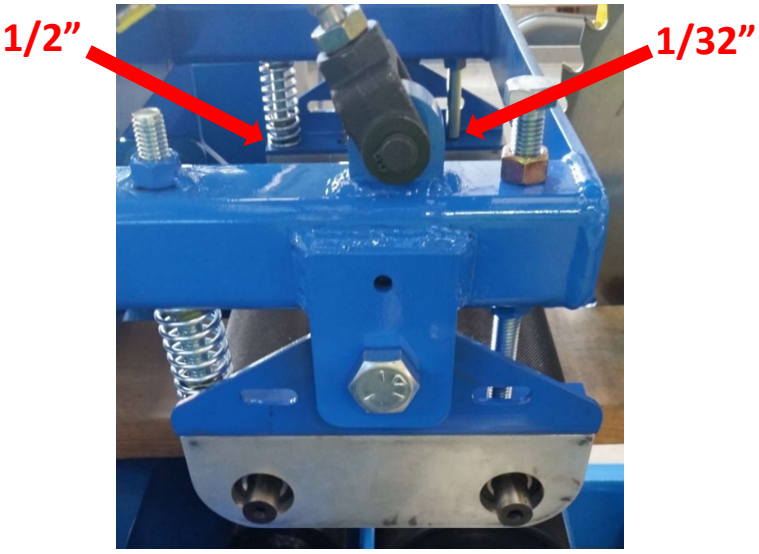
STEP 1: Adjusting Upper Clamp Hard Stops

With the clamps engaged the infeed should be 1/4” gap before it hits the pan, and the outfeed should be 1/16” gap before it hits the pan (You should just be able to get a 25 cent piece under the bolt).



Adjust bolt all the way down, then back off (1/4” = Roughly 3.5 Turns) and (1/16” = Roughly 1 Turn) and lock jam nut in place. Check all four bolts and jam nuts for tightness. Clean the end of each bolt of any compressed sawdust.

STEP 2: Upper Idle Roller Hard Stops



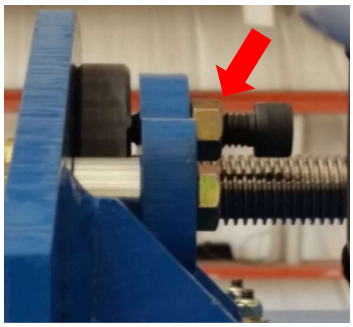
With the clamps engaged:
The spring side gap should be 1/2” (Two full turns)

The bolt side gap should be 1/32” (1/2 Turn)
(You should just be able to slide a business card under the bolt)

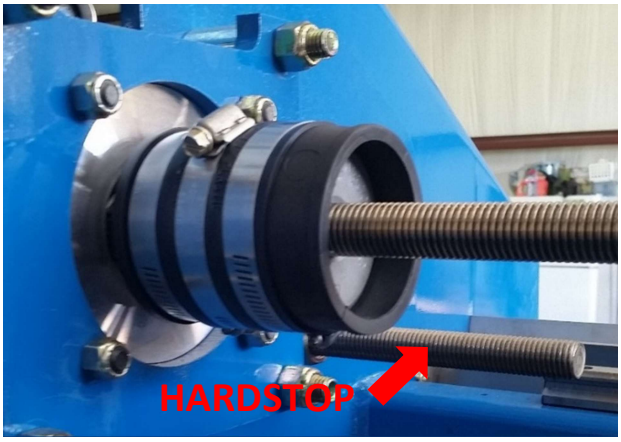
Check all eight bolts.

STEP 3: ACME Lead Screw Nut Retainer Tension

Should be finger tight, use jam nut to lock into place. Do not over tighten, can cause binding when over-tightened!



STEP 4: ACME Lead Screw to Motor Connection (Lovejoy Coupling)



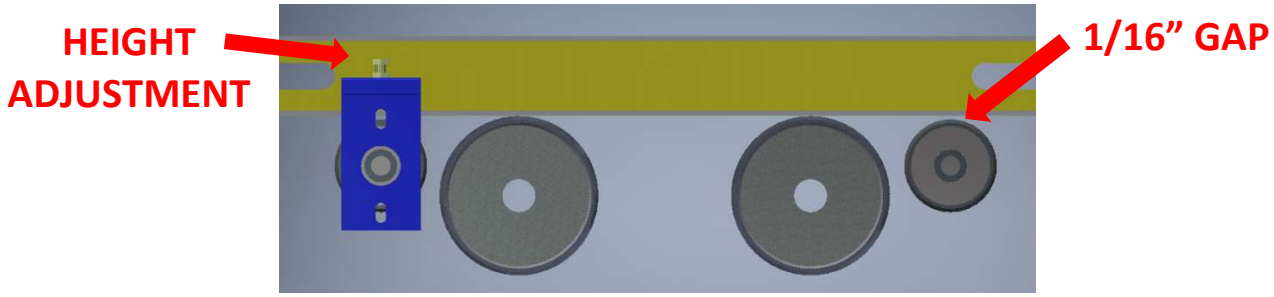
The set screw on ACME side coupling should be lined up with flattened surface on lead screw

Verify couplings are tightly mated together under the rubber boot. Machine should have a shaft collar that locks the lead screw against the flange bearing. The collar must be welded in place. Check that hard stops are tight.

Use a wire brush to clean off saw dust build up on lead screw, and spray with white lithium grease on after every shift. Do not use excessive WD-40 near ACME nut it can cause damage.

STEP 5: Lower Idle Roller Height

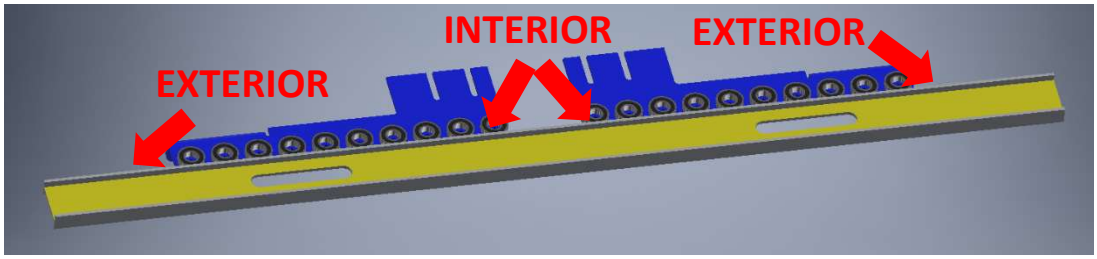
With a straight level resting across both feed rollers: Idle rollers should be 1/16” lower than the feed rollers. Adjust bolt and jam-nut to correct the height only if necessary. Rollers should not vary from their factory settings.



Confirm there is no play in any of the 8 rollers. Also check upper idle roller bearings

STEP 6: Fence Alignment

With level in feed area, press against the rollers. Confirm all bearings make contact be rocking against bearings and checking for spin. At a minimum the interior and exterior of each fence should move simultaneously. Check that all rollers spin freely. Replacement is necessary for any tight or sticking rollers. Only adjust if necessary. Fence should not vary from their factory settings, confirm roller bearing quality before adjusting fence.



STEP 7 (L): Check Board Travel (LEFT HAND FEED MACHINES)

A) Place a very straight 16-0-0 board into the in-feed clamps (only infeed, leave outfeed unclamped) so the front end is just beyond the infeed roller. Clear all hands away from clamps. Engage infeed ceram valve at the red button as shown below. Push gently and turn clockwise ¼ turn.

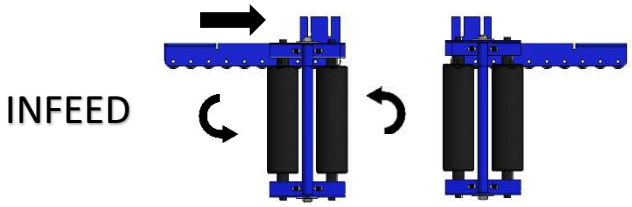
Jog the board forward through the machine, stop before the end of the board. The board should stay tight against the fence.

If it did, proceed to "Step B".
If it rode away evenly from fence see "**Step C**" (Angle was under adjusted)
If it rode away at an angle from fence see "**Step D**" (Angle was over adjusted)

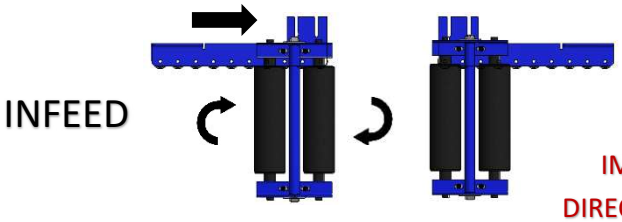
B) With board mostly fed through machine: jog board back out, and stop just before the end of the board. It should ride an even 3/4" away from the fence at 10' of jogging. Meaning there should be 3/4" gap at both exterior bearings.

If it did, (if it looks like the above illustration) you are finished. The upper rollers are properly adjusted.
If it rode evenly less than 3/4" away, see "**Step C**" (Angle was under adjusted)
If it rode evenly more than 3/4" away, see "**Step D** (Angle was over adjusted)
If it rode away at an angle, see **"Step C"** (Angle was over adjusted in the wrong direction)

C) Loosen aluminum bearing block bolts and lightly bump rollers to drive board **into** the fence. Retighten and retest. Small increments are suggested.



D) Loosen aluminum bearing block bolts and lightly bump rollers to drive board **away** from fence. Retighten and retest. Small increments are suggested.



IMPORTANT: PIVOT CARRIAGE IN BOTH DIRECTIONS TO CONFIRM THERE IS NO BLADE CONTACT BEFORE RUNNING MACHINE!

E) Repeat all above steps for the out feed clamps.

STEP 7 (R): Check Board Travel (RIGHT HAND FEED MACHINES)

A) Place a very straight 16-0-0 board into the in-feed clamps (only infeed, leave outfeed unclamped) so the front end is just beyond the infeed roller. Clear all hands away from clamps. Engage infeed ceram valve at the red button as shown below. Push gently and turn clockwise ¼ turn.

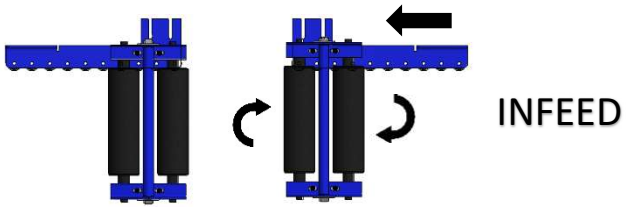
Jog the board forward through the machine, stop before the end of the board. The board should stay tight against the fence.

If it did, proceed to "Step B".
If it rode away evenly from fence see "**Step C**" (Angle was under adjusted)
If it rode away at an angle from fence see "**Step D**" (Angle was over adjusted)

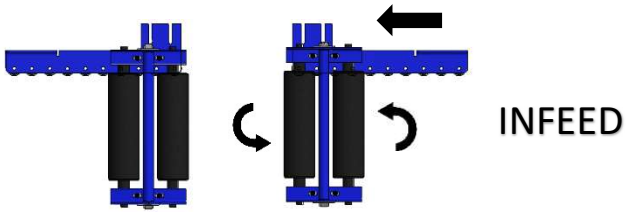
B) With board mostly fed through machine: jog board back out, and stop just before the end of the board. It should ride an even 3/4" away from the fence at 10' of jogging. Meaning there should be 3/4" gap at both exterior bearings.

If it did, (if it looks like the above illustration) you are finished. The upper rollers are properly adjusted.
If it rode evenly less than 3/4" away, see "**Step C**" (Angle was under adjusted)
If it rode evenly more than 3/4" away, see "**Step D** (Angle was over adjusted)
If it rode away at an angle, see **"Step C"** (Angle was over adjusted in the wrong direction)

C) Loosen aluminum bearing block bolts and lightly bump rollers to drive board **into** the fence. Retighten and retest. Small increments are suggested.



D) Loosen aluminum bearing block bolts and lightly bump rollers to drive board **away** from fence. Retighten and retest. Small increments are suggested.

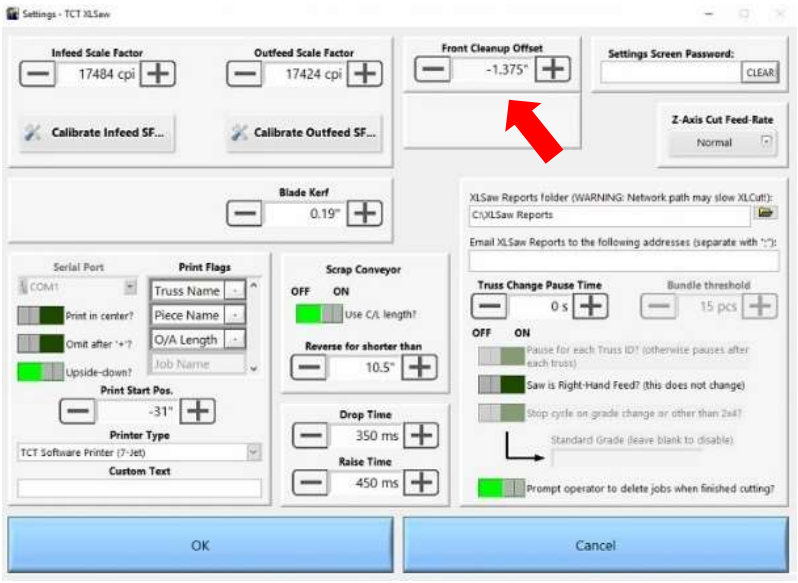


E) Repeat all above steps for the out feed clamps.

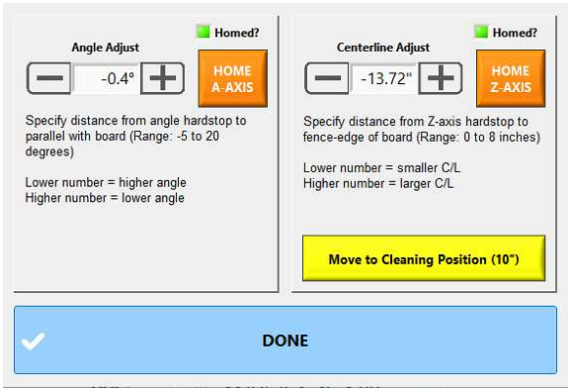
STEP 8: Front Cleanup and 90 Degree

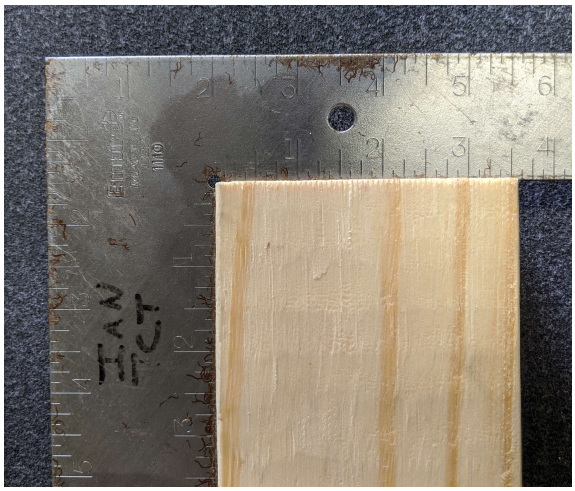
Go to jobs/calibration and select a length test, any length of cut will work. Make sure the temporary front clean up on the main screen is set to zero. Using the widest lumber possible, cut just the front edge. Hit cycle stop as soon as the front cut is made and jog the board out of the machine before the second cut is made.

If the blade did not contact the front of the board, increase the front cleanup. If a physical piece of wood falls off from the cut, decrease the front clean up number. Confirm only dust is cleaned off of the front of the board.



Once the front clean up is dialed in, set the temporary front clean up on the main screen to 1”. Recut the length file to put a clean edge on the front of the board. Use a square as shown to confirm the end of the cut is truly 90 degrees. There should be no light visible. Dial in the Angle Adjust as necessary and re-home and re-cut until this is 90 degrees.





STEP 9: Blade Center of Pivot

Open cage door, then make sure machine is completely powered down. Place a 4’ level just inside the blue 6”x6” frame tubes, set on top of the roller pans. Secure level into place by clamping it directly to post. It is critical that the level is 100% even, or test results will not be accurate. Hand rotate the saw head to zero. The saw head will not be up against the hard stop when it is properly square, there will be a slight gap.

With saw head in the down position (air turned off) and the blade at zero, use a tape measure to check distance between the side of the blade that is facing you and a solid point in the machine. The dust guard at the back door is a good constant surface to use. Then hand rotate the saw head 180 degrees and repeat the measurement on the side of the blade facing you. Both measurements should be equal to each other.

If the measurements are not equal to the previous measurements: Mark the current position of the saw head. Loosen the saw head at its four bolts (two on either side of the carriage cylinder shoe) and move the head half of the distance that the two measurements varied. Tighten bolts and re-measure to confirm the blade is centered.

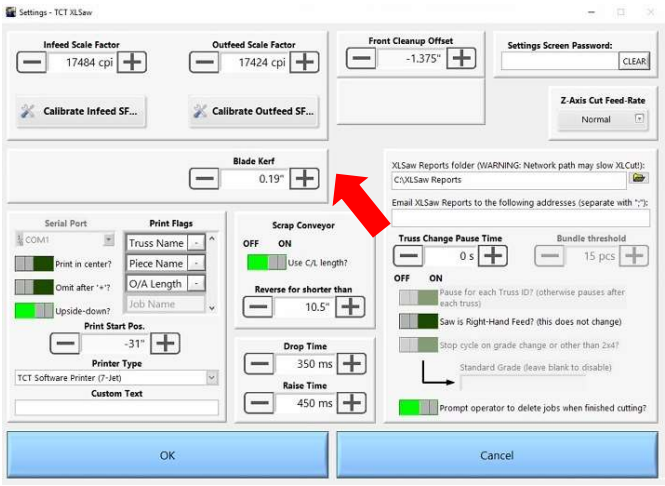
Note: This measurement may have to be slightly adjusted outside of “equal” to achieve a proper 30-150 test.

STEP 10: Blade Center of Pivot - Vertical

Complete the previous test by measuring the top and bottom of blade. If this measurement is not even, check that up/down cylinder is positioned vertically. Adjust as necessary until vertical measurement is achieved.

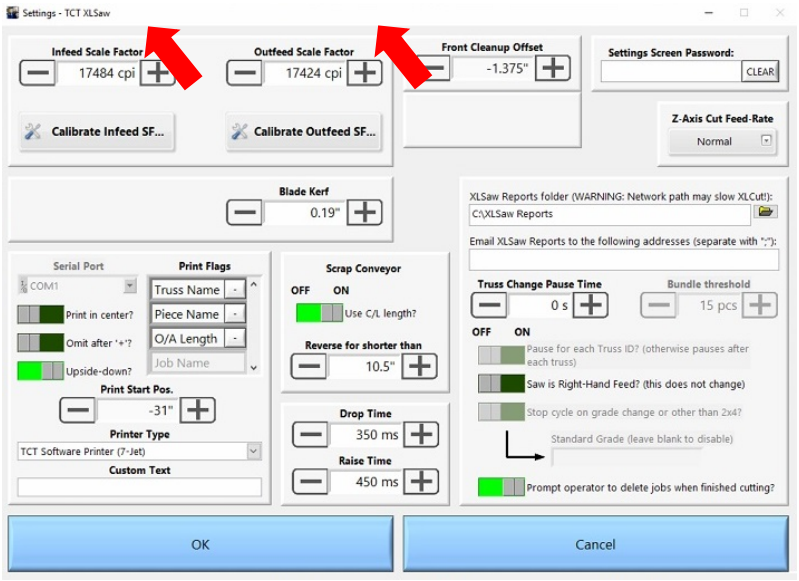
STEP 11: Kerf Test

Go to jobs/calibration and select the kerf test file. Load saw with a very straight 2x4 and select 0.19” kerf test. Compare the 4 angle board to double 45 piece. These two boards should be the same length. Move up or down with kerf test files until these two boards are identical. Use measurement from cut file to apply to setting screen and to the optimizer (I.E. 0.19”). This test should be re-cut after each blade replacement.



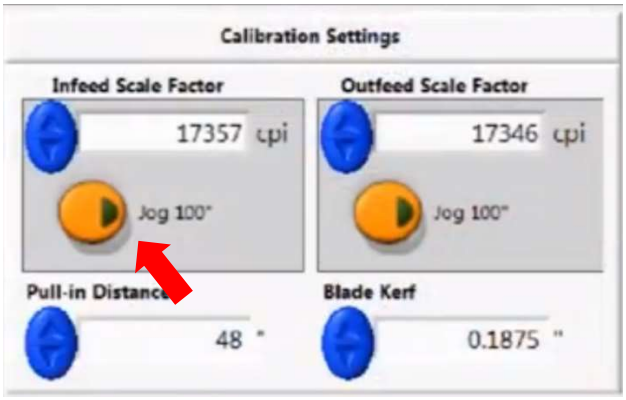
STEP 12a: 100” Test (For Software with Calibration Wizard)

Open settings screen and select calibrate infeed scale factor. Follow on screen instructions. Once infeed is accurate, move to calibrate outfeed scale factor. Be sure to complete all steps in both infeed then outfeed before continuing.



STEP 12b: 100” Test (For Software without Calibration Wizard)

Clamp a 16-0-0 2x4 into the in-feed clamp. Then use a 2-0-0 board to draw a line across the 16-0-0 board. Then under calibrations settings hit the orange “Jog 100”” button to get your infeed scale factor.



After jogging the board repeat the line with the 2-0-0 board, and measure between the two lines. If your measurement is 100” (8-4-0) it is accurate. If the number is greater or smaller, recalculate your CPI (Counts Per Inch) below:

_____ x 100 ÷ _____ = _____

(Your Original Scale Factor On Your Screen) (Actual Measured Distance of Travel) (New Scale Factor)

Repeat process after any changes are made. Then repeat process for the out feed rollers.

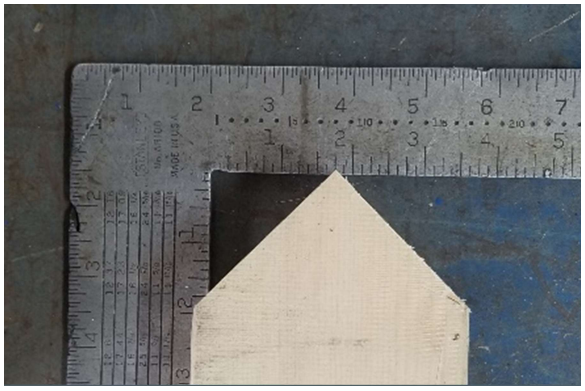
STEP 13: Stretch / Shrink Test

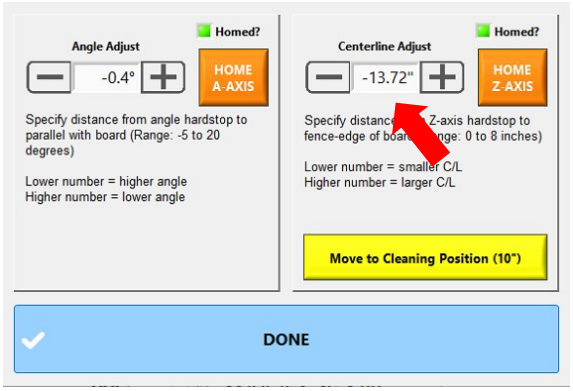
Go to jobs and select calibration file (2x3, 2x4, 2x6, ect…) Test each board width individually. Cut first piece in test file 16-0-0 (90/90) and measure result. Select “Stretch / Shrink Adjustments” button on main screen, and adjust associated board width adjustment based on result of first cut.

Note: Each point represents 1/16”. (Example: If 16-0-0 cut is 1/4” short, adjust slider to **-4**)
Repeat steps using test board 15-11-0 (90/90) measure result, make adjustment, ect until desired length is achieved.

STEP 14: Centerline Test (Z-Axis Home Offset)

Select the “Centerline Test” file and cut a double 45, use a framing square to measure center of point (See below)





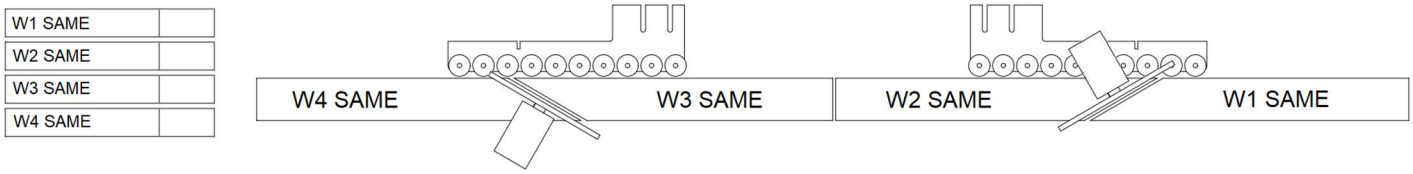
Adjust z-axis home offset forward or back based measured point. Re-Home Z-Axis before cutting next test board.
Repeat steps until double 45 ends in the center of the board.

STEP 15: 30-150 Test

If all other tests were performed correctly, this test should be accurate on first try. Please note that the *length* of boards is **not important**, it is the relation of boards to one another that is *key*.

If the saw can cut the 30-150 cuts and all four boards stack up identical to each other the machine software and hardware dynamics are correctly adjusted. If the cuts do not line up with each other you can diagnose what area of the XL-Saw needs to be adjusted by keeping the 4 boards **in cut order**.

Select the “30-150 Test” file and out of one board, start off by cutting (2) 90-30 boards and (2) 90-150 boards as shown.



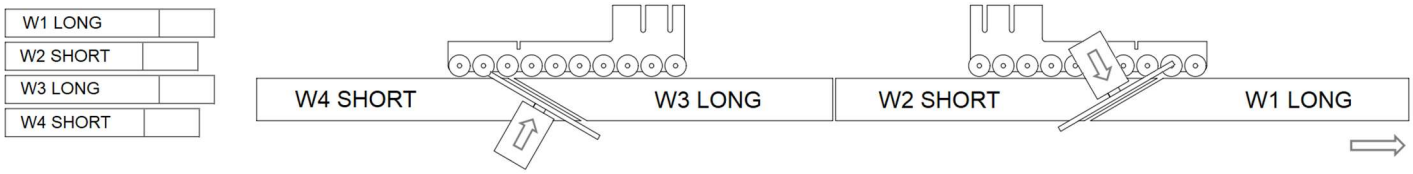
Now stack the 90-30 and the 90-150 boards in the order they were cut (W4 – W3 – W2 – W1) and compare with the following scenarios to determine if any adjustment is needed or what adjustment needs to be made.

STEP 15: 30-150 Test Variations for a LEFT Hand Feed XL-Saw

SCENARIO #2: Pieces 1 and 3 are long, pieces 2 and 4 are short.

Problem: Blade is off center of towards the motor.

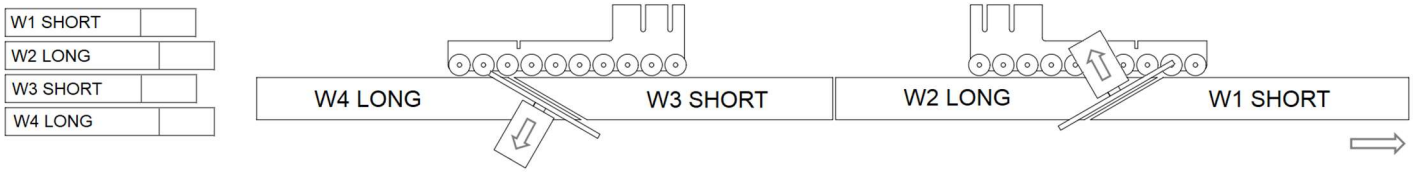
Adjustment needed: Slide motor direction of arrow towards blade. See step #8.



SCENARIO #3: Pieces 1 and 3 are short, pieces 2 and 4 are long.

Problem: Blade is off center of away from the motor.

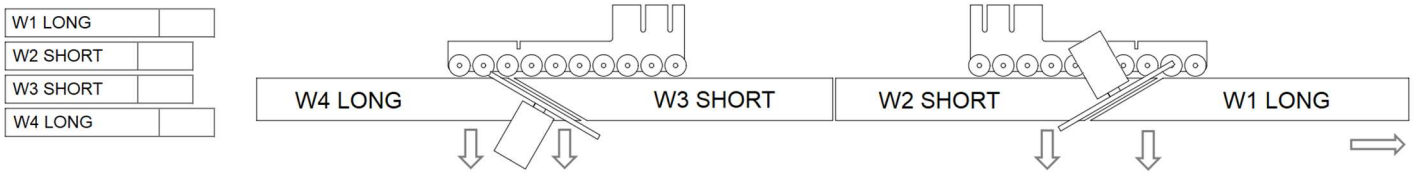
Adjustment needed: Slide motor direction of arrow away from blade. See step #8.



SCENARIO #4: Pieces 1 and 4 are long, pieces 2 and 3 are short.

Problem: Z-Axis Home Offset is off towards front of saw.

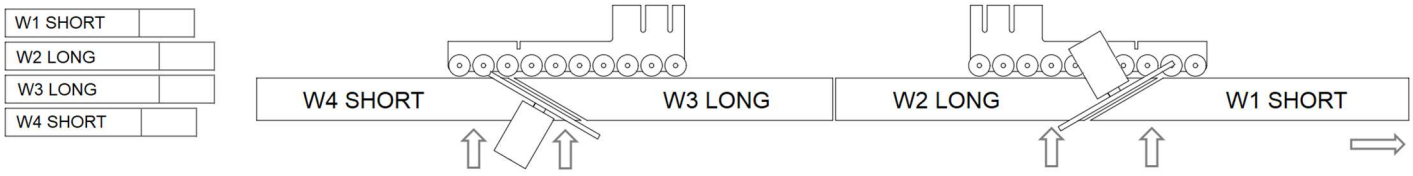
Adjustment needed: Move Z-Axis Home Offset direction of arrows. See step #11.



SCENARIO #5: Pieces 1 and 4 are short, pieces 2 and 3 are long.

Problem: Z-Axis Home Offset is off towards back of saw.

Adjustment needed: Move Z-Axis Home Offset direction of arrows. See step #11.

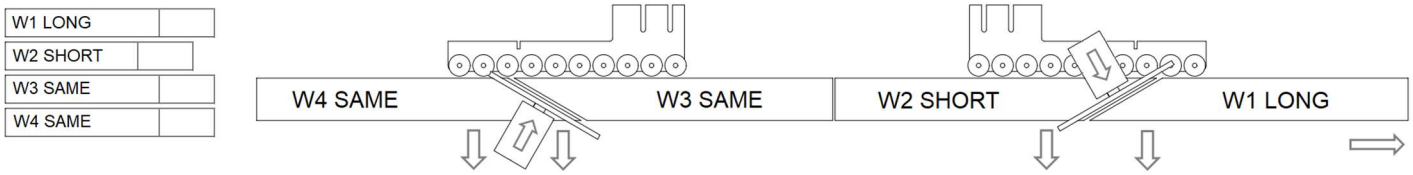


STEP 15: 30-150 Test Variations for a LEFT Hand Feed XL-Saw (Continued)

SCENARIO #6: Piece 1 is long, piece 2 is short, and pieces 3 and 4 are the same.

Problem: Z-Axis Home Offset is too far back of saw and blade is off center toward motor.

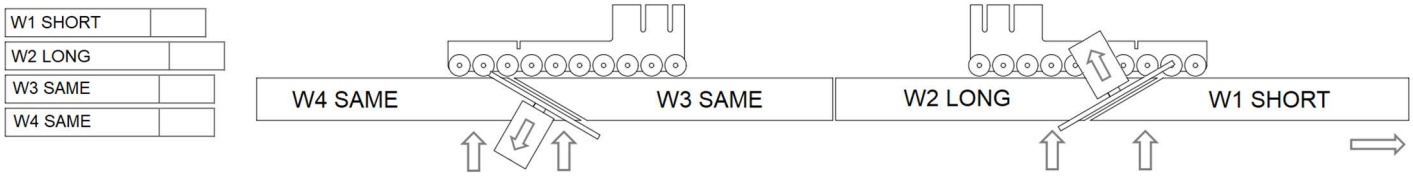
Adjustments needed: Move Z-Axis Home Offset direction of arrows. Slide motor direction of arrow towards blade. See step #8 and 11.



SCENARIO #7: Piece 1 is short, piece 2 is long, and pieces 3 and 4 are the same.

Problem: Z-Axis Home Offset is too far forward towards front of machine and blade is off center away from motor.

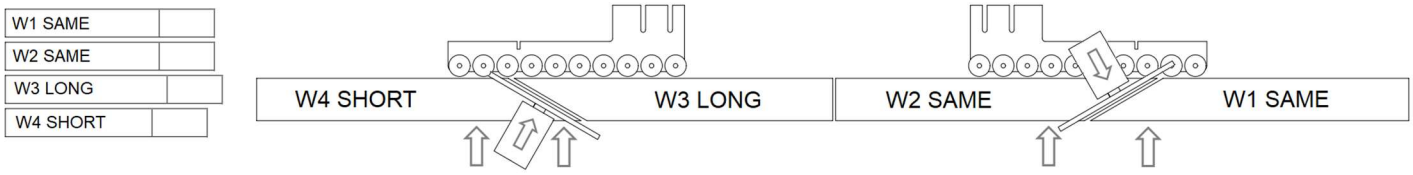
Adjustments needed: Move Z-Axis Home Offset direction of arrows. Slide motor direction of arrow away from blade. See step #8 and 11.



SCENARIO #8: Piece 1 and 2 are the same, piece 3 is long, and piece 4 is short.

Problem: Z-Axis Home Offset is too far forward towards front of machine and blade is off center toward the motor.

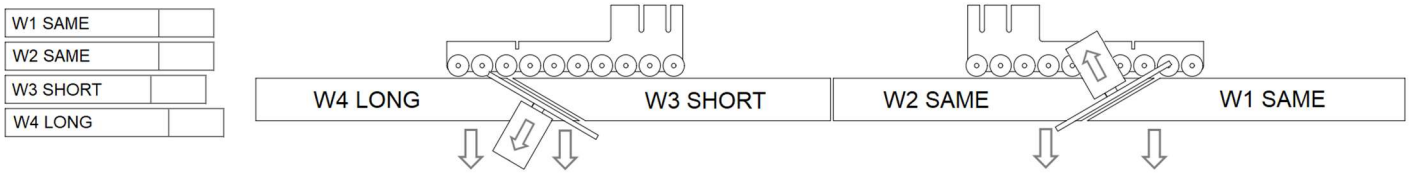
Adjustments needed: Move Z-Axis Home Offset direction of arrows. Slide motor direction of arrow towards blade. See step #8 and 11.



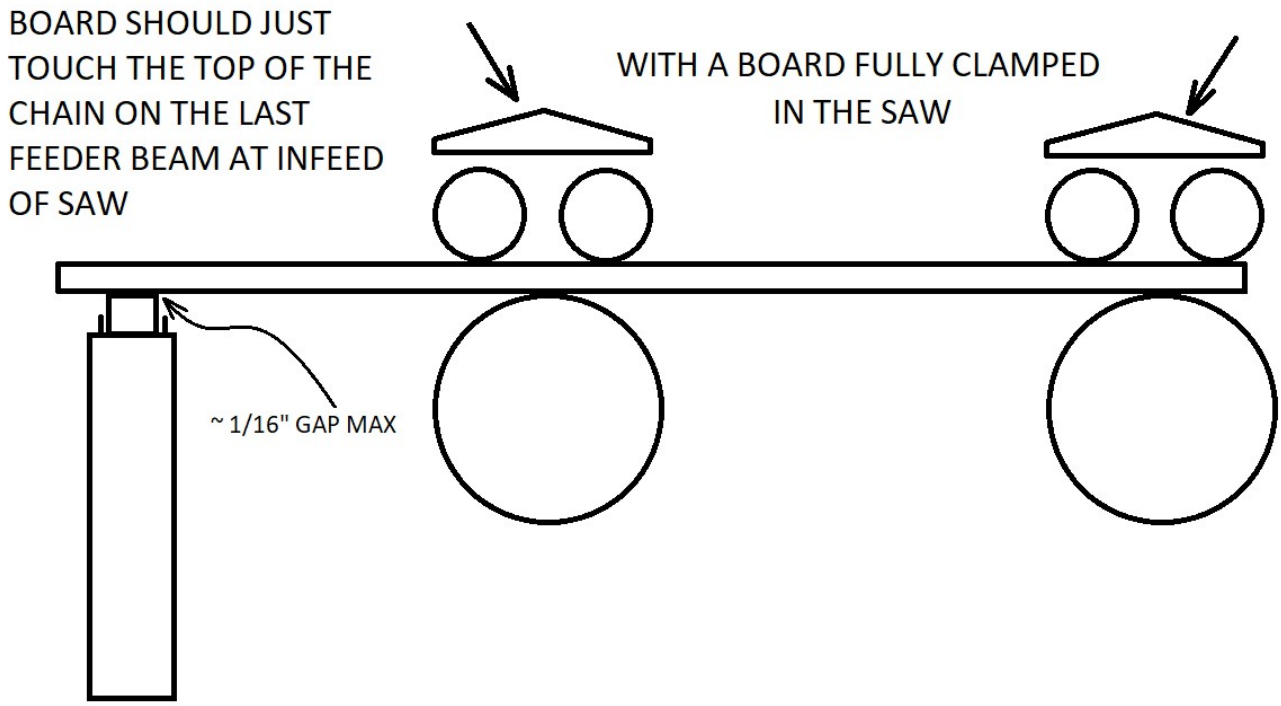
SCENARIO #9: Piece 1 and 2 are the same, piece 3 is short, and piece 4 is long.

Problem: Z-Axis Home Offset is too far back towards back of machine and blade is off center away from motor.

Adjustments needed: Move Z-Axis Home Offset direction of arrows. Slide motor direction of arrow away from blade. See step #8 and 11.



Service Bulletin Update: Saw Height



If board is dragging on chains, the height of the saw needs to be adjusted. Saw should remain level in relation to all four feet. Adjust until board lightly touches first chain with board **clamped** in both rollers.

XL-Saw Maintenance Schedule:

Every 4 Hours
Clean out excessive buildup of saw dust in saw cage
Check for scrap pieces in saw cage

Every Shift
Completely clean out all saw dust inside and outside machine
Clean and lube Z-axis acme screw
Clean feed rollers including XL-Feeder roller
Clean air cleaners
Check oil level in filter trio (fill as needed)
Check adjustment on upper roller adjustment bolts
Check outfeed upper roller rocking limit bolts
Spray off print head with solvent (no compressed air)
Check to ensure that the electrical panel is tightly closed

Once per week
Grease front grease fitting on saw motor (2 pumps only)
Clean 3.5" tension rollers (all 6)
Grease the Z-axis rails (4 fittings)

Once per month
Grease all flange bearings on saw, conveyors and feeder
Oil feeder chains (lightly)
Grease the rear fitting on the saw motor (1 pump only)
Clean interior electrical cabinet

Every 3 months
Clean all air valve mufflers (soak in lacquer thinner and blow off)
Check for loose wires and conduits
Check for air leaks
Check tension on feeder chains
Check for loose bolts

Every Year
Replace air cleaners
Replace all tension roller bearings
Replace all fence bearings
Check for wear on feed roller knurling (replace as necessary)
Check condition of conveyor belting
Replace XL-Feeder rub blocks and or rollers