

# Bandsaw Tune-up

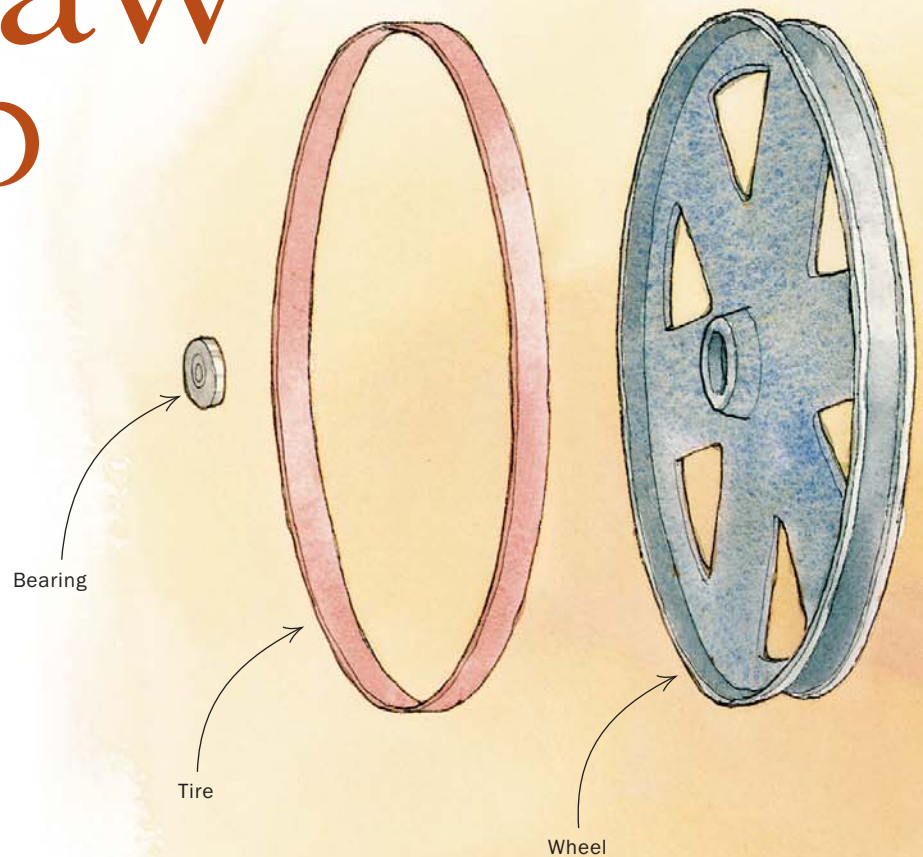
In just a few steps you can make an old bandsaw run like new

BY JOHN WHITE

A poorly tuned bandsaw will cause nothing but frustration. But the tune-up process is straightforward, takes only a few hours and is certainly worth the trouble. The procedure of making a bandsaw behave consists of two basic steps: tuning up the machine and then adjusting it for the blade being used and the work being done.

In this article, I've broken down the tune-up process into its main components, allowing you to go through the whole machine step by step. During tune-up, the machine's wheels, drive pulleys and table are brought into alignment, and the guide assemblies are cleaned and lubricated. Also, the machine's tires, drive belts, guide components and bearings are checked and, if necessary, replaced. Once a bandsaw has been tuned up properly, setting it up for the blade and work at hand is quick and simple. If you run into problems in the future, use the chart at right to help troubleshoot the machine. □

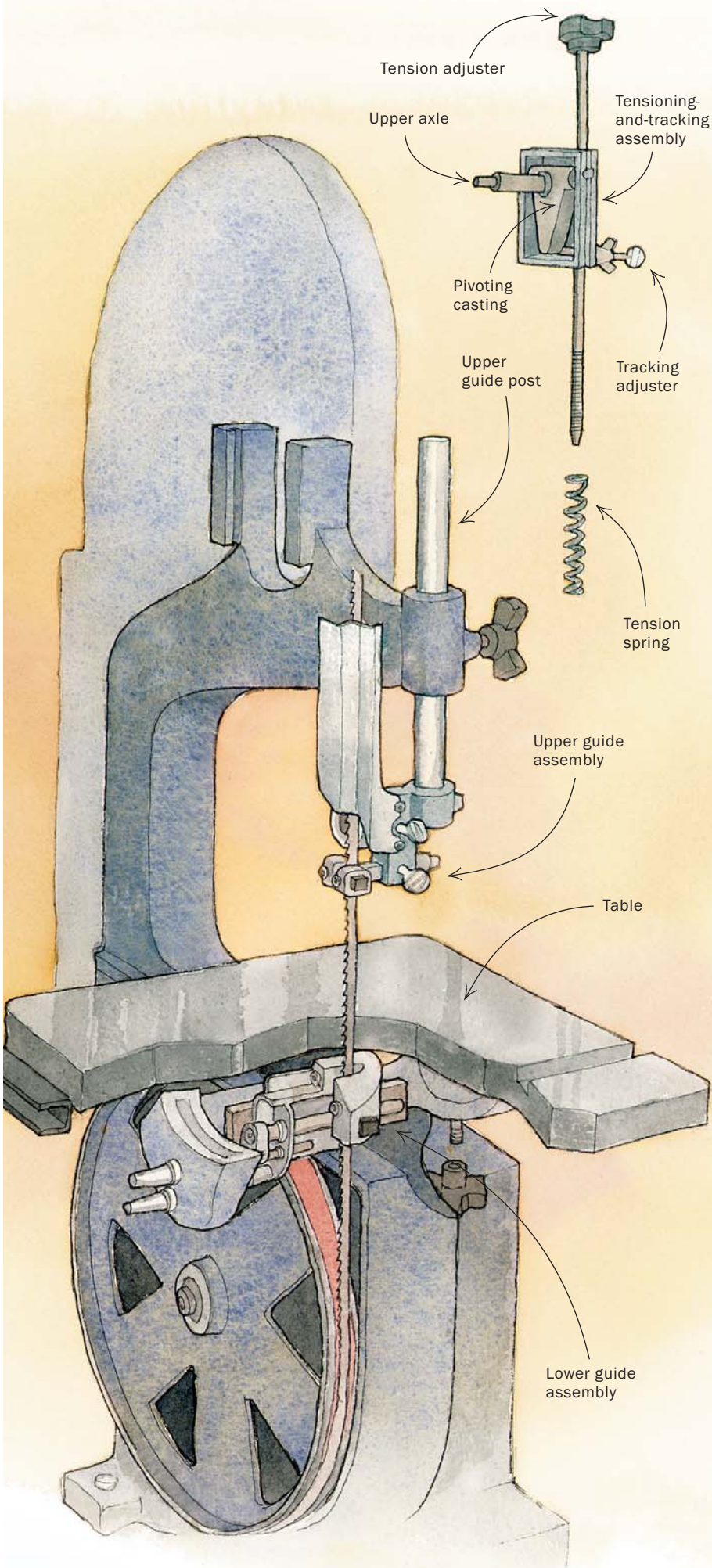
*John White is the shop manager for Fine Woodworking.*



## Troubleshooting Guide

SYMPTOM	POSSIBLE CAUSE	SEE
<b>Vibration at high speed</b>	<ul style="list-style-type: none"> <li>Pulleys on motor are worn or bent</li> <li>Drive belt is stiff or worn</li> <li>Wheel-bearing failure</li> <li>Thrust-bearing failure</li> </ul>	<b>Wheels, Blade guides</b>
<b>Vibration at low speed</b>	<ul style="list-style-type: none"> <li>Wheels are bent or misaligned</li> <li>Dust buildup on tires</li> <li>Tires are cracked or worn</li> <li>Tire is lifting off wheel</li> <li>Blade is cracked or kinked or has a bad weld</li> </ul>	<b>Wheels, Tires</b>
<b>Blade doesn't stay centered on wheels</b>	<ul style="list-style-type: none"> <li>Tires are grooved, hardened or worn</li> <li>Wheel-bearing failure</li> <li>Wheels are misaligned</li> <li>Tracking mechanism is slipping or bent</li> </ul>	<b>Tension, Wheels, Tires</b>
<b>Blade doesn't cut straight</b>	<ul style="list-style-type: none"> <li>Blade is dull</li> <li>Fence is not aligned for drift</li> <li>Worn guide blocks</li> <li>Low blade tension</li> <li>Poorly adjusted guides</li> </ul>	<b>Tension, Blade guides</b>
<b>Cut is barrel-shaped</b>	<ul style="list-style-type: none"> <li>Blade is dull or too narrow</li> <li>Feed rate is too fast</li> <li>Low blade tension</li> <li>Poorly adjusted guides</li> </ul>	<b>Tension, Blade guides</b>

## TENSION



**T**he tensioning-and-tracking assembly controls the position of the upper wheel. Remove the upper wheel and cover to get at the assembly. Inspect the pivoting casting that supports the axle for cracks or bends from overtensioning. A cracked or bent casting should be replaced. If the axle is loose, which is common, don't worry—it will tighten up when tension is applied. Use light oil to lubricate the pivot pin.

After a few years of use, the slides on both sides of the square main casting will probably have a step worn into them—use a file to smooth down the worn faces and the sharp edges left on the top of the grooves in the casting. Use a stick lubricant on the slides before sliding the assembly back into the frame.

The original tensioning spring on a 14-in. bandsaw is almost always crushed, making it impossible to tension the blade properly. The spring can be replaced with a heavy-duty version from Iturra Designs (888-722-7078) without having to remove the upper wheel and blade cover (see the photo above and *FWW* #147, p. 83).

The last step in servicing the top end of the saw is to remove the tension and tracking bolts—clean the threads with a wire brush and round off the ends with a file. Use a stick lubricant on the bolts before you reinstall them.



**Remove cover and clean up tensioner.** With the cover removed (above), it is easy to access the tensioner. Once the tensioner is removed, check to be sure the axle isn't bent, and then file the slides on both sides smooth.

## WHEELS



**Check the alignment.** Begin by placing a long straightedge (White uses a 4-ft. level) across both wheels. Then adjust the tracking mechanism to bring the upper wheel parallel to the straightedge.

**H**aving the upper wheel aligned directly above the lower wheel allows the bandsaw blade to track better and puts less stress on the saw and the blade. On a 14-in. bandsaw, checking the alignment is easy. Remove the table and lay a long straightedge across the faces of both wheels. If the wheels are out of alignment, you'll see a gap between the straightedge and one wheel. On a Delta saw, the wheel alignment is adjusted by adding

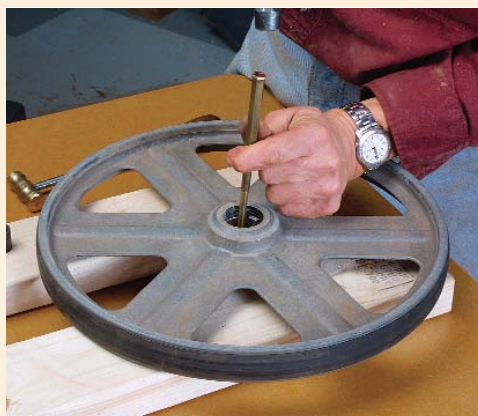
or removing shims on the upper axle. On Jet and most other Taiwanese-made saws, the upper wheel can't be shimmed without placing excess pressure on the wheel bearings. These saws are aligned by shimming behind the lower wheel. Iturra Designs sells inexpensive sets of graduated shims for both Delta and imported bandsaws.



**Shim out the upper wheel.** If the rims of both wheels aren't touching the straightedge, use shims to bring them into alignment. On Delta saws you can shim the upper wheel; for Taiwanese-made saws, shim the lower wheel.

## Checking and replacing wheel bearings

To test the wheel bearings, remove the saw's blade and rotate the wheel through several revolutions with the tip of a finger against one of the spokes. You may feel a slight drag, but the motion should be smooth and silent. Even small amounts of roughness or a grinding sound indicate a contaminated bearing. If there is only a small amount of catching, the saw is still usable, but new bearings should be installed soon. If there is continuous roughness or grinding noises, the saw shouldn't be used until new bearings have been installed.



**Out with the old, in with the new.** A bandsaw wheel has two bearings: Even if only one is failing, they should both be replaced. The wheel bearings must be tapped out with a hammer and punch (left). When installing a new bearing, gently tap it into place using a soft hammer against the outer race (right).



## TIRES

**T**ires are simply oversized rubber bands. But they should be checked regularly, because the rubber becomes worn, cracked or hardened and can cause tracking problems and vibration. A tire should have an obvious crown and be smooth and free of grooves. Press your thumbnail into the tire; it should press in easily, and the surface should spring back. A lack of springback is a sign that the tire has hardened and needs to be replaced. To remove a tire, use a screwdriver to lift it over the rim. If the old tire was glued on, clean off the adhesive using acetone. The new tire should snap into a groove in the rim of the wheel (see the photos below).



**Installing a tire.** Stretch the tire over the wheel (top). To even out the tension on the tire, slide a screwdriver between the wheel and tire, then rotate the wheel while holding the screwdriver in one spot (bottom).



### ALIGNING FRONT TO BACK



**Square the tabletop to the side of the blade.** Tip the table and adjust the stop bolt mounted on the trunnion support casting.

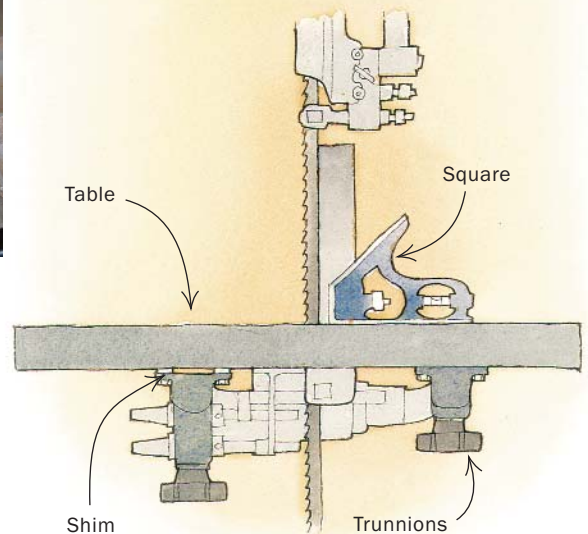
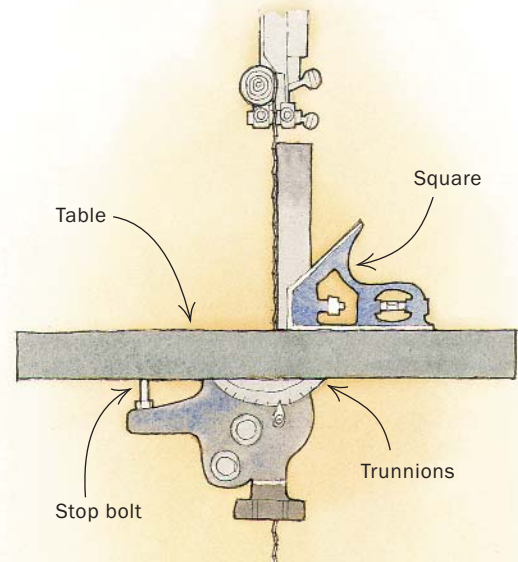
### ALIGNING SIDE TO SIDE



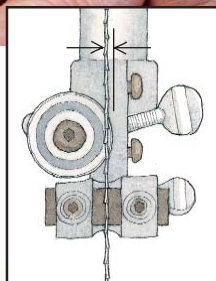
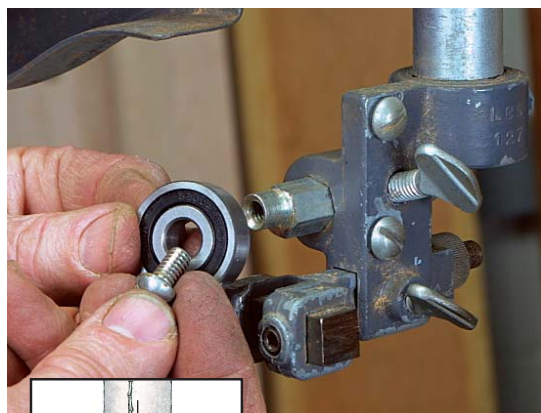
**There's only one way to square the table to the back of the blade.** You need to insert shims between the table and the trunnions until the blade and the table are aligned. While you have the top off, be sure to clean up and lubricate the trunnions.

## TABLE

**T**o get square cuts on a bandsaw, the table must be aligned square to both the sides and back of the blade. To align the table, first back off the blade guides and then adjust the blade to full tension and proper tracking. Place a square on the side of the blade and adjust the stop bolt (see the middle photo to at left) to square up the table. Once the table has been adjusted, zero out the pointer on the table-tilt scale. To square the table to the back of the blade, loosen the table bolts from underneath, remove the table and place shims between the trunnions and the table casting. This process may take a little trial and error, but you only have to do it once, and it is definitely worth the time.



## BLADE GUIDES



**Align the upper thrust bearing.** The blade should ride along only the outer edge of the bearing. If one face is scarred from use, flip over the bearing and use the back face.

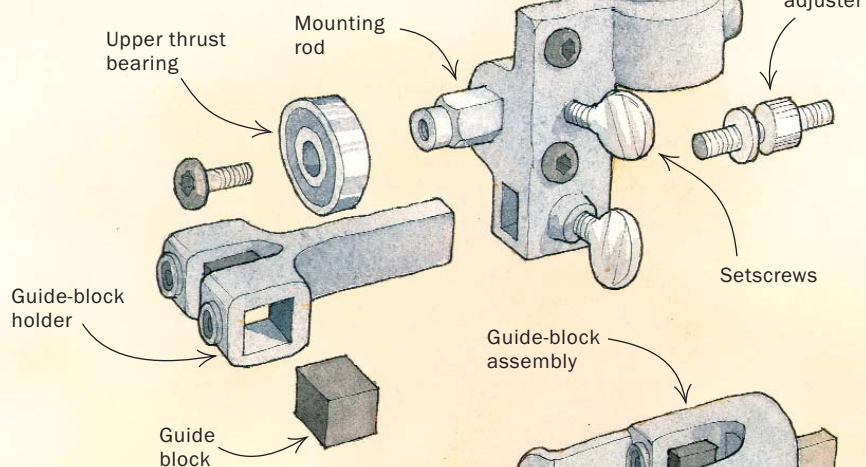
The guide assemblies on a 14-in. saw are mechanically simple but have a number of parts that can wear out or jam up. Start by replacing any thrust bearing that is noisy or won't rotate freely. Then remove the bearing support and guide-block holders, file off any paint and burrs and inspect all parts for cracks or worn threads. Remove all of the setscrews and round off their ends with a file—the smoothed ends will hold better. Remove the knob that locks the guide post and shape the tip of its threaded end to match the groove in the

guide post. Clean and lubricate the threads and the other parts of the guides as you reassemble them.

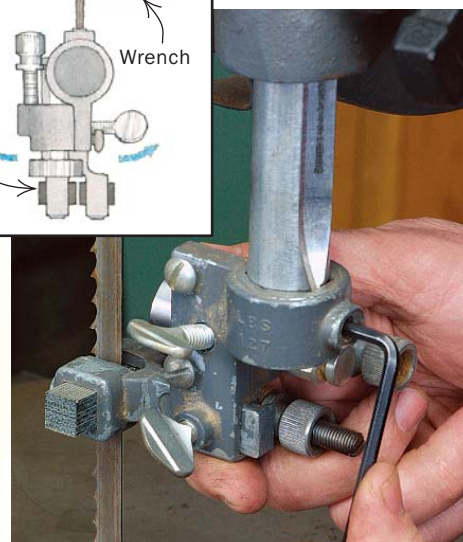
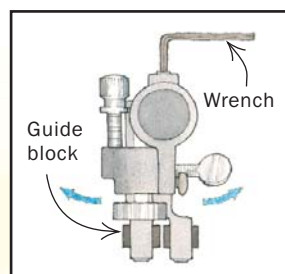
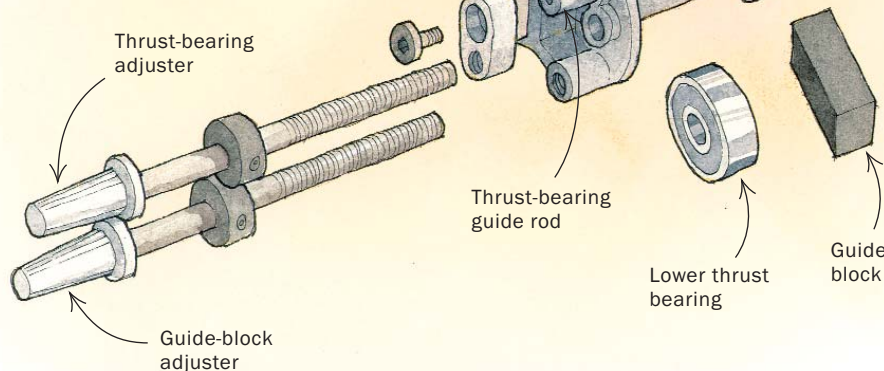
The guide blocks should be smooth, flat and square. Clamp the blocks in the holder with their faces touching; there should be no gaps between the blocks.

The lower guide assembly on the Delta 14-in. bandsaw is more complex than the upper guide assembly, but the same logic applies to tune-up. The lower guide assembly on a Taiwanese-made saw is tuned up the same way as the upper guide assembly.

### UPPER GUIDE ASSEMBLY



### LOWER GUIDE ASSEMBLY



**Align the guide assembly with the blade.** Loosen the Allen screw on the upper guide assembly and adjust the assembly until the faces of the guide blocks are parallel to the blade.

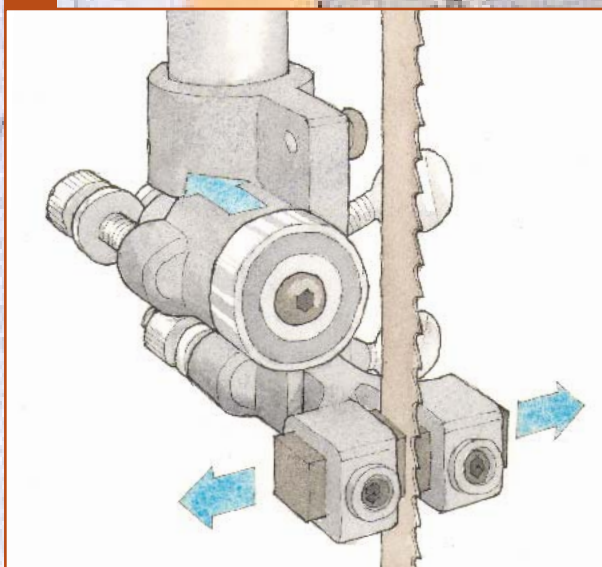


**Replace the lower thrust bearing.** Remove the nut on the end of the guide rod and slide off the tube to free up the bearing. Clean up everything and, if necessary, slide a new bearing into place.

## Installing a bandsaw blade

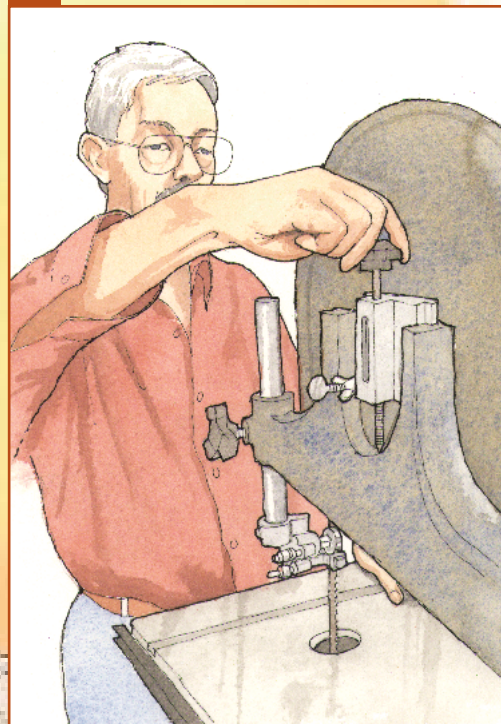
A bandsaw is not properly tuned until you have installed the blade and made sure it is tensioned and tracking properly and that the guides are set correctly. Following the steps here makes this a quick and straightforward process.

### 1 Position the blade

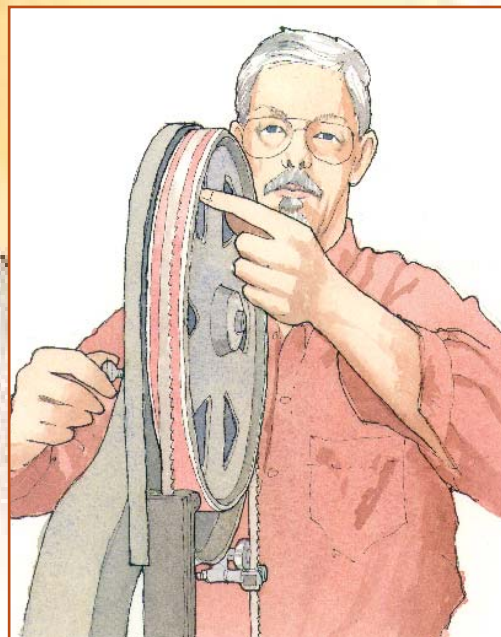


With the saw unplugged, pull back the guides and the thrust bearings and place the new blade on the wheels. Raise the upper guide assembly to clear the stock you'll be cutting by  $\frac{1}{4}$  in. to  $\frac{1}{2}$  in.

### 2 Tension and track

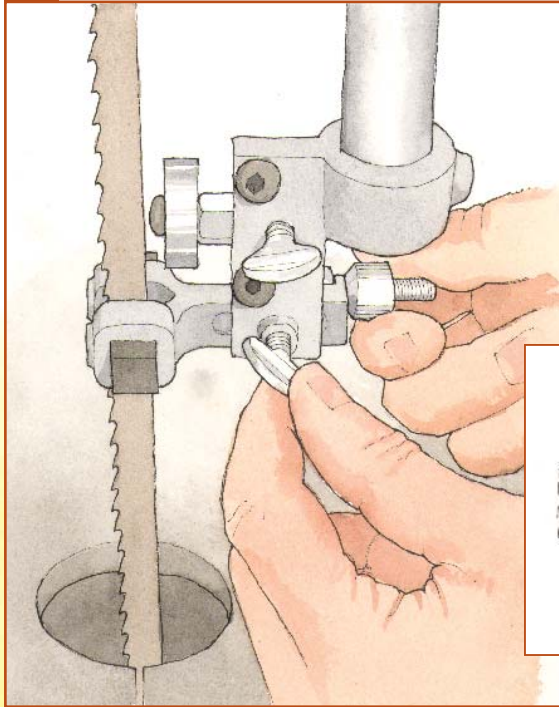


Rotate the upper wheel by hand while alternately increasing the tension and adjusting the tracking to keep the blade centered on the upper wheel.



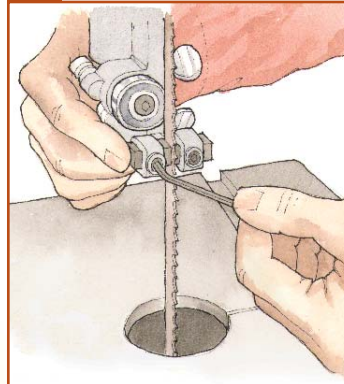
Turning the tracking adjustment in adjusts the blade toward the back of the wheel.

### 3 Adjust the guide assemblies



Move the upper and lower guide assemblies forward or backward to align the leading edge of the guide blocks or bearings with or just behind the back of the sawblade's gullets.

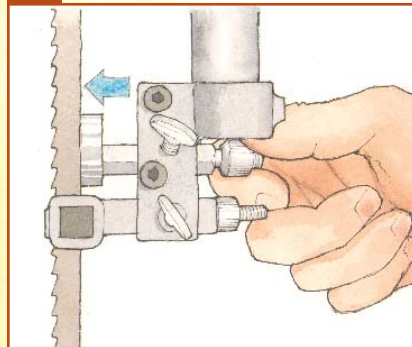
### 4 Adjust the guide blocks



Move one of the guide blocks or bearings in each assembly so that it just touches the side of the blade. Lock it in place. Double-check that the block or bearing doesn't reach beyond the back of the blade's gullets. Bring the second block of each assembly against the blade. A soft block can be locked in place touching the

blade. Hard blocks or ball-bearing guides should be spaced away from the blade with a single piece of paper. Rotate the blade by hand to check that a bad weld or kink in the blade won't cause problems.

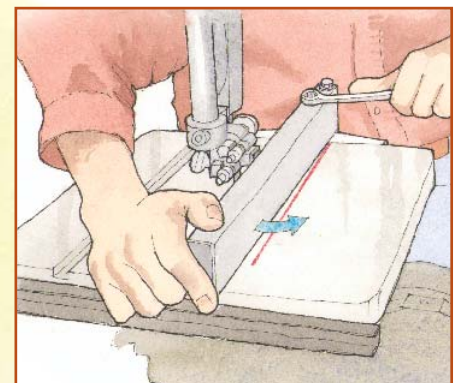
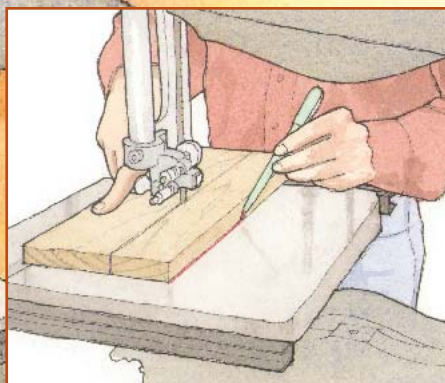
### 5 Position the thrust bearing



Bring the upper and lower thrust bearings forward to just barely touch the back of the blade. Rotate the blade by hand to make sure everything turns smoothly.

### 6 Align the fence for drift

Begin by drawing a straight line parallel to the edge of a test board. Rip the board freehand, adjusting your feed angle until the blade naturally follows the line.



Once the blade is following the line, hold the stock in place and turn off the saw. Use a marker to draw a line on the tabletop along the edge of the stock. Reinstall the fence and adjust its angle parallel with the mark on the table.

