Tune Up Your Tablesaw To Perfection

These quick fixes and minor adjustments will make all the difference.

It rips, crosscuts, makes dadoes, and more—the tablesaw serves as the key tool for most woodworking projects. So, you need to make sure that your machine puts out straight, square, smooth results every time.
To help you achieve the accuracy you've always wanted, we'll show you how to set your tablesaw to eliminate rough or out-of-square cuts. We'll also describe routine maintenance procedures that will help you permanently avoid such problems in the future.

Certainly, you can use high-tech tune-up tools for these tasks, such as the ones reviewed in WOOD magazine issue 150, page 74. But here we'll talk about low-tech, low-cost ways to achieve high-level precision. Most of the steps shown apply to both cabinet saws and contractor's saws; where there's a difference, we'll break it down for you. All you need is a reliable triangle to measure 90° and 45° angles (we used a plastic drafting triangle, available at most art or office supply stores), the appropriate wrenches for your tablesaw, and a few pieces of scrapwood. Now, let's get started.

**How's your blade running?**
You can't make good cuts unless your blade runs true. Assure that by checking the arbor flange surface, pulley alignment, and belt tension. And while you're working in that area, make sure the bevel stops are giving you precise 90° and 45° settings. Although all of these features are tucked away underneath the tablesaw top, you can access them without removing the top. Unplug the saw before you start, and leave it unplugged until you've finished your tune-up.

- **The flange comes first.** Smooth cuts depend on a blade that's spinning true, not wobbling. Remove your blade, and make sure the arbor flange is clean, as shown in Photo A, so that it serves as a smooth, flat seat for the blade.

Wipe the arbor flange clean with a rag. If stubborn resin deposits remain, put on solvent-proof gloves, moisten the rag with mineral spirits, and repeat. Remove any metal burrs with a fine file.

- **Test the pulleys and belts.** Pulleys must be aligned to permit the saw to run smoothly and precisely. On a cabinet saw, check that detail, as shown in Photo B. On a contractor's saw, you'll need a longer straightedge than the one shown here. And if you can't fit any straightedge into position, close one eye and carefully sight across the pulleys with the other.

  Your saw needs adequate belt tension to run vibration-free. To check tension on a cabinet saw, push on the middle of each belt (your machine might have one, two, or three belts) with one finger. The belt should deflect no more than $\frac{1}{4}$" under moderate pressure. Make any necessary adjustment, as shown in Photo C. A contractor's saw uses the weight of its suspended motor to keep constant belt tension, and requires no adjustment.
• **Now, the blade-tilt settings.** Establish a level base by checking the throat insert plate, as shown in **Photo D**. Now, set the blade to full height, and turn the blade-tilt handwheel until the 90° stop engages. Check its accuracy as shown in **Photo E**. To adjust a cabinet saw, remove the motor cover, find the bolt that protrudes at the near end of the front trunnion, and proceed as shown in **Photo F**. Next, turn the blade-tilt handwheel as far as it will go in the other direction, and check the 45° setting as shown in **Photo G**. Adjust it by turning the bolt that’s accessible through the curved slot at the height adjustment handwheel, as shown in **Photo H**. On some contractor’s saws, you can adjust the stops on the tabletop surface through holes that are located over the trunnions.

With the stops set, recalibrate the blade-tilt scale, if necessary. Crank the blade to 90°, loosen the scale pointer screw, make the adjustment, and retighten the screw. Now the scale will provide accurate readings at every blade-tilt position from 90° (0° on the scale) to 45°.

To tighten the belt or belts, loosen the motor bracket bolt that allows vertical movement of the motor. Press down on the motor with one hand while retightening the bolt with the other hand.

Place a triangle or other straightedge over the throat insert plate, and check to see if the insert sits flush with the tablesaw top. Most inserts have four leveling screws that you adjust from above with an allen wrench. If your saw’s insert doesn’t have leveling screws, you may have to file the underside of the insert to lower it, or use layers of masking tape to raise it. After making the adjustments, slide the straightedge across the plate at several points to check that it’s flush.
Use your triangle to set your blade to 90°, keeping the vertical edge against the blade plate, not on the teeth.

The bevel limit on most saws is 45°, so you’ll find a stop bolt for that angle, too. Use your triangle to check the setting.

To adjust the 90° setting, remove the motor cover if necessary to gain access to the stop bolt. Crank the blade-tilt handwheel until you can easily reach the stop bolt with a wrench. Loosen the jam nut, and then turn the stop bolt in or out as needed. Turn the handwheel to the 90° (or 0°) setting, and then recheck the blade angle with your triangle. When it’s right, retighten the jam nut.

To correct the 45° setting, turn the blade-tilt handwheel until you can reach the stop bolt through the slot at the blade-height handwheel. Adjust the stop, and recheck the setting as before.
To check the alignment of your blade and table, first remove your splitter/blade guard. Raise the blade to maximum height. Then, select a piece of straight scrap about 12" long, and drive a brass roundhead screw partway into one end to make an alignment bar. Place your miter gauge in either of the saw’s slots, hold the alignment bar against the miter gauge so the screw lightly contacts a tooth that leans toward it, and clamp the bar to the gauge. If the gauge is slightly loose in the slot, hold it firmly against one side while you turn the screw in or out to fine-tune the setting. Mark the tooth with a felt-tip pen, and rotate the blade slightly, so the tooth just “ticks” the screwhead. Slide the bar/gauge assembly to the other end of the throat plate, and rotate the blade by hand so the screw touches the same tooth. If the amount of contact is the same as before, the blade and miter-gauge slot are parallel.

**Align the table, fence, and miter gauge**
Now that you know your blades will run true, install a new or newly sharpened blade, and make a test cut or two. If problems remain, it’s time to deal with still other alignment issues.

Your blade must sit parallel with the miter-gauge slots and rip fence to produce perfect crosscuts and rip cuts. Misalignment results in out-of-square cuts, rough surfaces, and burn marks on the cut edges. If you see such flaws, check all of these possibilities, not just one or two. It’s better to spend a little more time than to miss a problem.

- **Check the blade/table alignment.**
  Start by making sure the tablesaw’s miter-gauge slots sit parallel with the blade. Do this with a simple jig, as shown in Photos I, J, and K.
  The design of a contractor’s saw calls for different alignment procedures. See Photo L for instructions on how to adjust the trunnions, which are bolted to the underside of the table, and support the saw’s working mechanisms.

- **Inspect the rip fence.** Once the table is in position, turn your attention to the rip fence. Using the same piece of wood that served to check the table alignment, or any scrap that fits snugly into a miter-gauge slot, proceed as shown in Photos M and N.
  If your fence is out of alignment, consult your owner’s manual for the necessary steps to adjust it. In most cases, you’ll loosen bolts or setscrews, set the fence correctly, and retighten the fasteners.

- **Next comes the miter gauge.**
  It’s simple to check the miter gauge, as shown in Photo O. If necessary, adjust your gauge, as shown in Photo P. Some miter gauges don’t allow for adjustment, relying on precise machining to provide accurate results as long as the tabletop and blade are aligned.

  If the gauge sits too loosely in the slot, use a center punch to dimple one edge of the bar, or buy an adjustable gauge that you can set to fit the slot snugly. Finally, you’ll find it’s handy to keep one miter gauge set for 90° cuts, and adjust a second one as needed for other angles.
If your blade and miter-gauge slots don't align, adjust the table position. On most cabinet saws, you'll find a bolt at each corner of the cabinet, extending up through the flange and into the table. Leave the right rear bolt snug as a pivot point, and loosen the remaining bolts. Tap on the appropriate corner of the table with a mallet, and repeat the alignment test. When the table lines up with the blade, retighten the bolts, and recheck the alignment.

In most cases, each of the two trunnions on a contractor’s tablesaw is held in place with two bolts. Working through the back side of the saw, loosen both of the bolts on the rear trunnion, and one bolt on the front trunnion. Leave the fourth bolt snug to serve as a pivot point. Place a piece of scrap against the rear trunnion, and tap it with a mallet. Recheck the blade/table alignment. If it’s good, tighten the rear trunnion bolt that's diagonal from the pivot bolt. If the alignment is still good, tighten the remaining bolts.

We recommend setting your rip fence perfectly parallel with the miter slots and blade. To do this, hold a piece of scrap near the front end of your right-hand miter-gauge slot, and slide the fence against it as shown in the upper photo. Lock the fence, then move the scrap to the back end of the slot. If it fits snugly there, too, your fence sits parallel to the blade. If not, you need to adjust the fence.
The typical tablesaw miter gauge has adjustable stops at 90°/0° and both 45° settings. Each stop consists of a screw that butts against a flip-up plate on the miter-gauge bar. To adjust a stop, loosen the handle or knob that holds the gauge head in place, loosen the stop screw’s jam nut with a wrench, and then turn the screw in or out as necessary. When the setting is dead-on, retighten the jam nut and the handle.

Once the table and blade are aligned, checking your miter gauge’s 90° setting is a snap. Use a reliable drafting triangle, and place it against the blade plate, not touching the teeth. You can use the same triangle to calibrate the two 45° settings.
A little work on the top and you’re ready to go
The steps above guarantee good cuts, but there’s more to be done on top of your tablesaw to make it safer and easier to use. It’s time to look at the splitter/blade guard assembly and the table surface.

• Fine-tune the splitter/blade guard.
Designs vary among different saw models, but the basic considerations remain the same. Make sure the splitter sits at 90° to the table’s surface and lines up with the center of the blade. Proper alignment eliminates the risk of binding and dangerous kickback as your workpiece travels across the saw. See Photos Q and R for details on checking and adjusting these safety devices.

• Keep everything on the level.
Next, level the extension wing or wings with the tabletop to eliminate raised edges that can catch a workpiece as you slide it across the table. See Photo S for help with leveling extension wings.
If you have added a wood extension table at the right side of the saw, check to make sure it’s flush, too. To make an adjustment, you might need to enlarge the mounting holes in the extension table. Then realign.

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