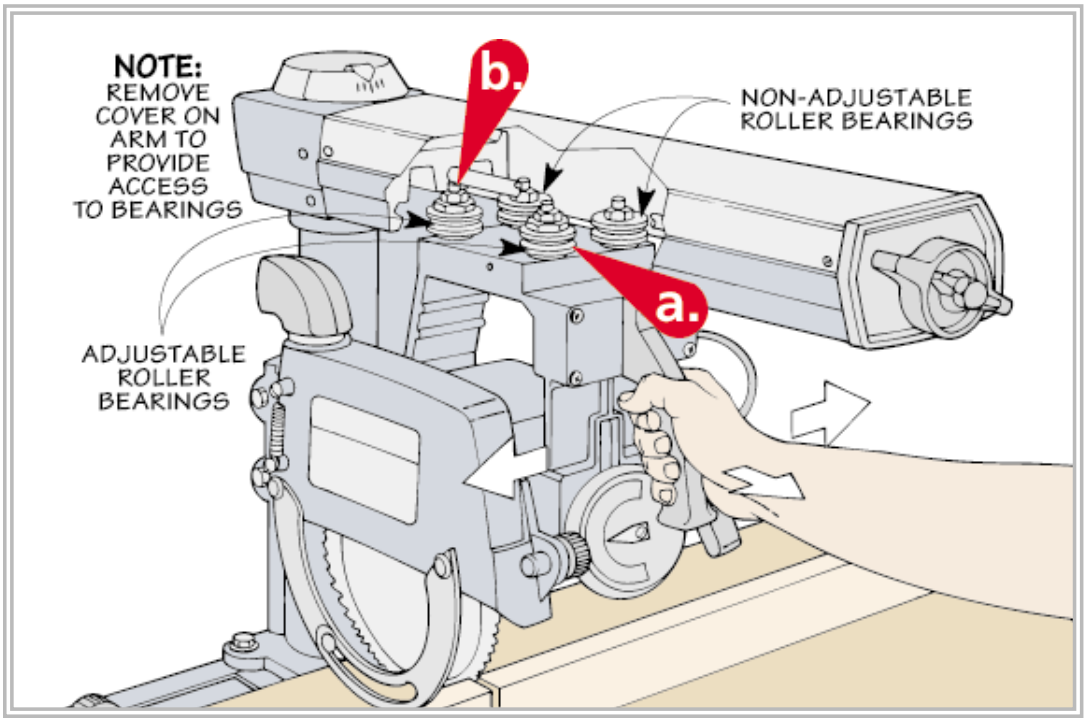
TOOL TUNE-UP



Radial Arm Saw

All it takes to keep a radial arm saw running in top condition is a little periodic maintenance and a simple tune-up.

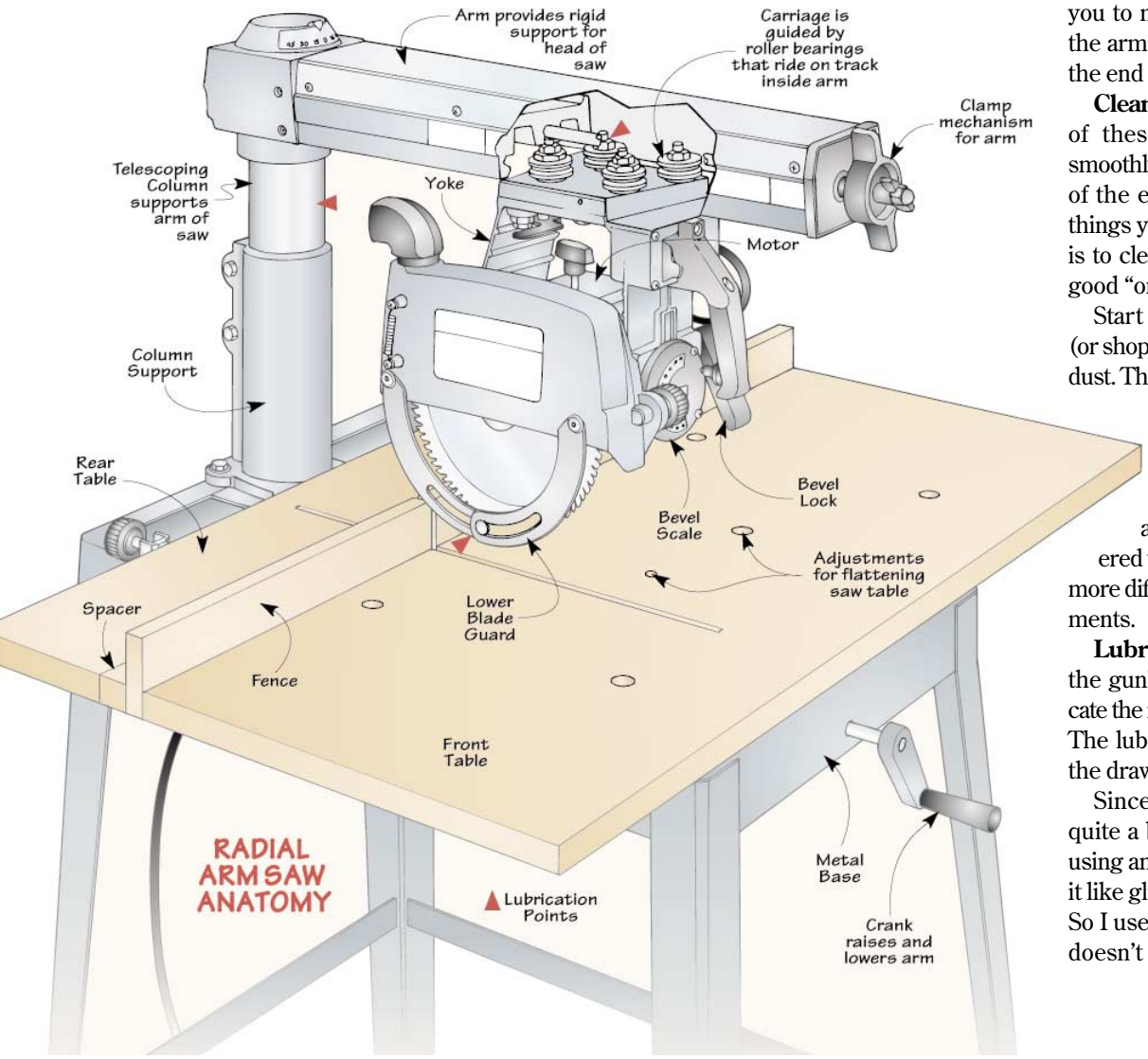
7 Step

Radial Arm Saw Tune-Up

There's no question that a radial arm saw is a versatile tool. You can use it for everything from crosscutting or ripping a board to cutting miters and bevels.

But there's a trade-off for this versatility. If the saw isn't adjusted properly, the result is a less than perfect cut. Perhaps the end of a board isn't square, or the saw blade leaves a rough, burned edge. Worse yet, the blade may "grab" and race through the workpiece under its own power. That's downright scary.

Tune-Up – Fortunately, all it takes to produce a smooth, accurate cut on a radial arm saw is a simple tune-up. This doesn't require any specialized tools. And all the adjustments can be boiled down to *seven* basic steps, so the entire process usually only takes about a half hour.



How it Works – Before you get started, it's worth taking a minute to look at the drawing below to see how the parts of the saw work together. A long *arm* supports the *head* (blade and motor) of the saw. The head is held in an adjustable *yoke* that allows you to pivot the blade 90° (for ripping lumber) or tilt it at an angle (to make beveled cuts).

To crosscut a board, the yoke is mounted on a sliding *carriage*. When you pull the head of the saw forward, the carriage is guided by a set of four *roller bearings* that ride on a *track* housed inside the arm.

To provide rigid support for the arm, it's attached to a cylindrical *column* that can be raised or lowered to adjust the depth of cut. By releasing a lock mechanism and swinging the arm to one side or the other, it allows you to make angled cuts. Or return the arm to a 90° setting to square up the end of a board.

Clean Saw – Needless to say, each of these parts needs to operate smoothly to ensure good results. One of the easiest (and most effective) things you can do to accomplish this is to clean up the saw by giving it a good "once-over."

Start by using an air compressor (or shop vacuum) to remove the loose dust. Then wipe off any caked-on dust with a rag dampened with mineral spirits. Pay special attention to the column, roller bearings, and the track. If they're covered with dirt and grime, it's much more difficult to make accurate adjustments.

Lubrication – After cleaning off the gunk, I make it a point to lubricate the moving parts of the saw. Note: The lubrication points are shown in the drawing at left.

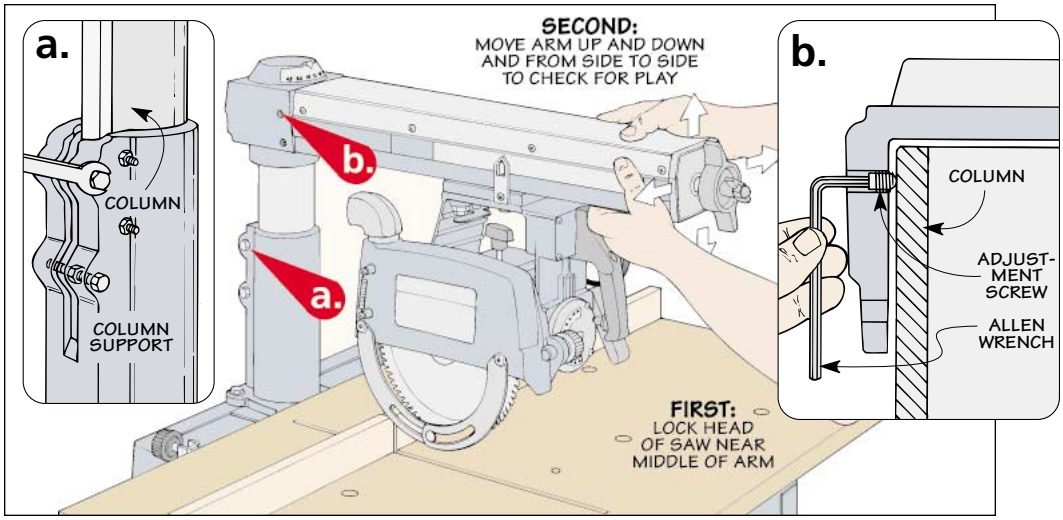
Since a radial arm saw produces quite a bit of dust, it's best to avoid using an oily lubricant. Dust sticks to it like glue and makes a gooey mess. So I use a "dry" spray lubricant that doesn't attract dust.

1. Adjust Column

The first step is to remove any "play" in the column. Ideally, it should fit snug (not tight) in two places: the *column support* and the *arm*.

To check the amount of movement in the column support, grasp the end of the arm and lift it up and down, as shown at right. If the column moves front to back, tighten the column support (detail 'a').

If there's any slop when you apply sideways pressure against the arm, just "snug" the adjustment screws against the column (detail 'b').

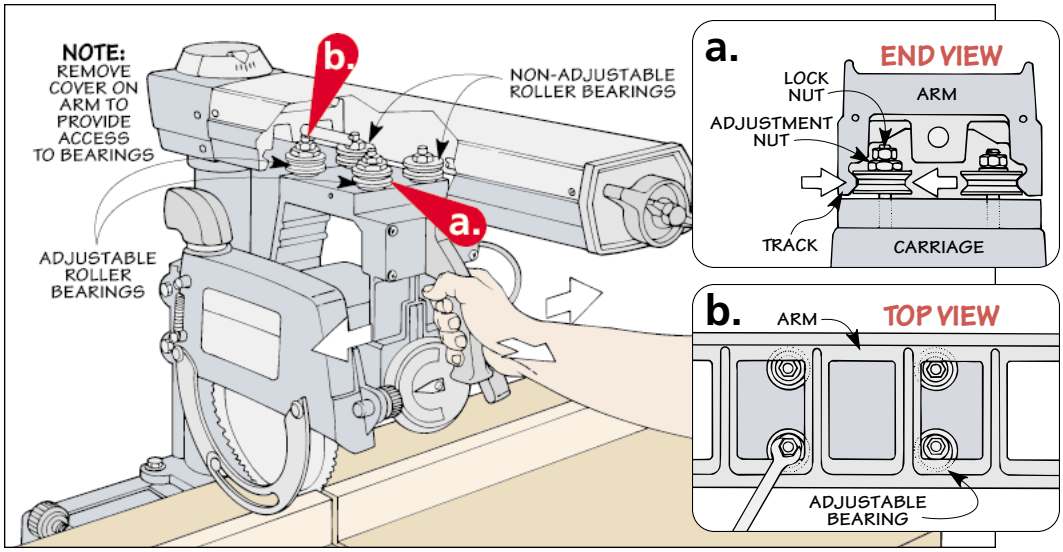


2. Check Bearings

The next step is to check the roller bearings that guide the carriage. When you pull the head of the saw forward, the bearings should glide smoothly without any side-to-side play.

If the movement feels sloppy (or there's a lot of resistance), the bearings can be adjusted closer to (or farther from) the track inside the arm.

There are two bearings on each side, but only one pair is adjustable. These bearings are mounted off-center (detail 'a'). So when you loosen a lock nut and rotate an adjustment nut, it moves the bearing in or out (detail 'b').



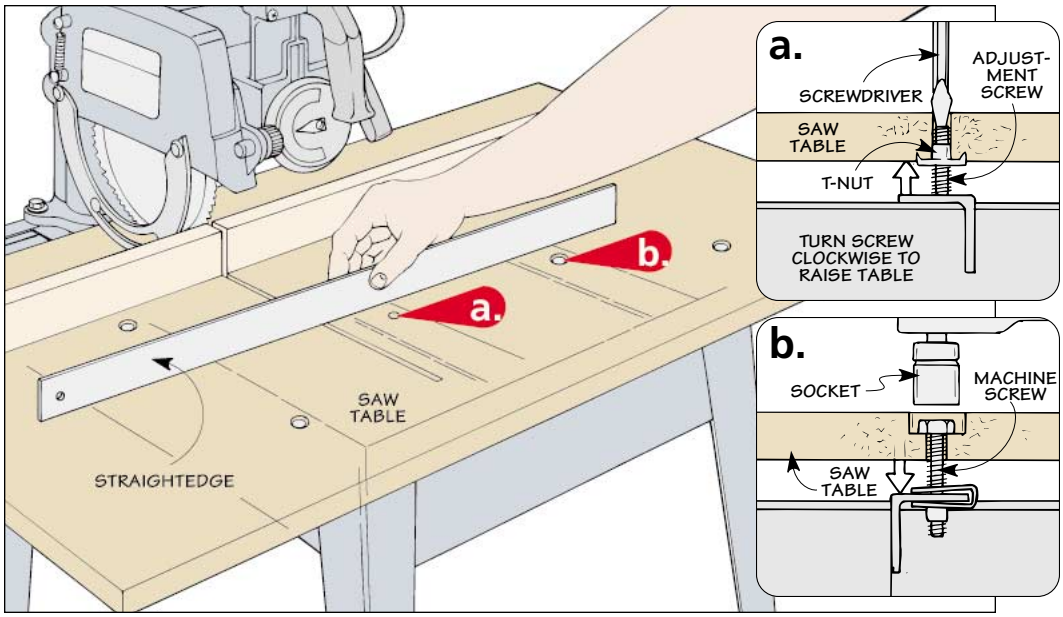
3. Flatten Table

To get consistent results, it's important that the table is flat.

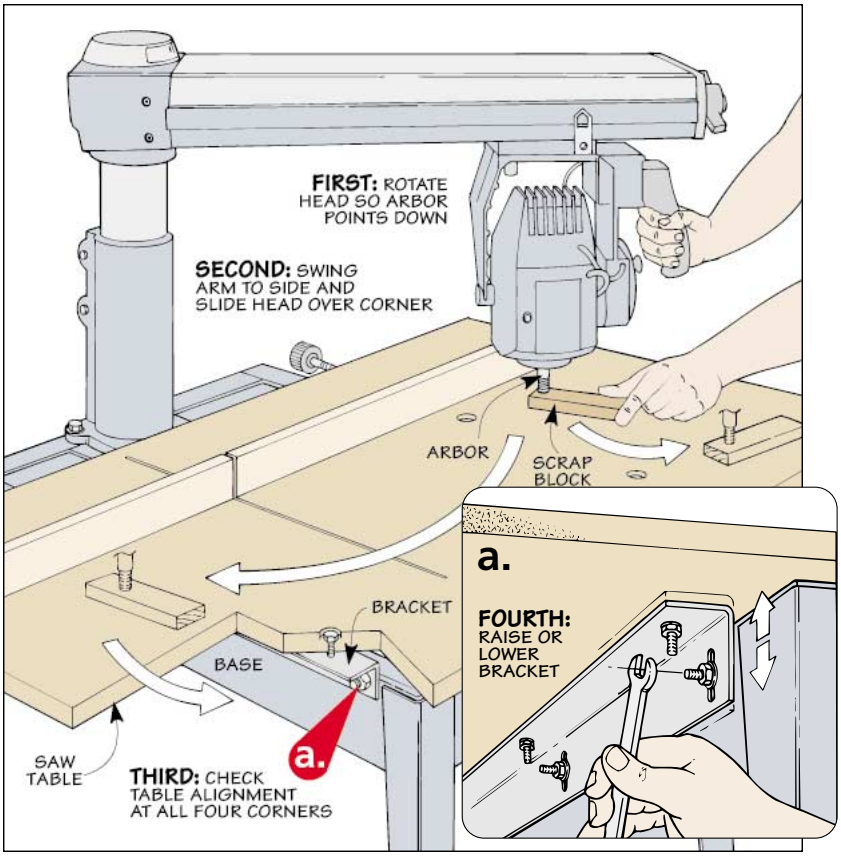
A quick way to test the flatness of the table is to lay a straightedge across the table and check for light underneath, as shown at right.

If the table is low, raise it by turning a set screw (detail 'a'). If there's a hump in the middle, tighten a machine screw to flatten it (detail 'b').

Note: With use, the saw table will get chewed up which can cause it to sag in the middle. So you may need to replace the table from time to time. To protect the surface of the new table, it's a good idea to carpet tape a piece of hardboard to the top.



4. Align Table



Getting the table *flat* is one thing. But the surface of the table also needs to be *parallel* to the arm. Otherwise, when you crosscut a board (or cut a dado), the depth of cut will vary from one edge to the other.

Usually, there's no adjustment for the arm. So you'll need to align the table to the arm instead. This is done by raising or lowering a pair of metal brackets that connect the table to the saw (detail 'a').

To determine the amount of this adjustment, start by removing the blade guard and saw blade. Then release the bevel lock and rotate the head of the saw so the arbor points straight down, as shown at right. After securing the bevel lock, release the clamp mechanism for the arm so you can swing it from side to side.

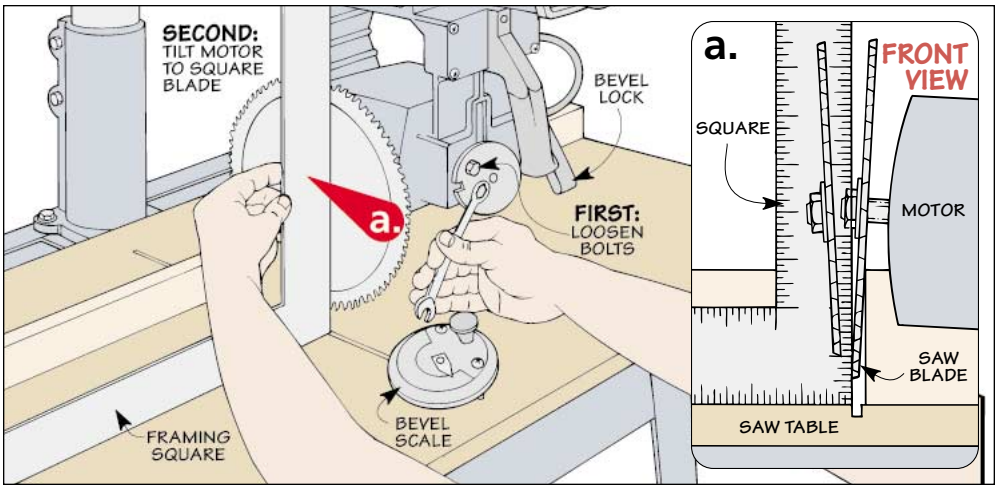
The idea here is to slide the head of the saw along the arm so you can position the arbor at all four corners of the table. At each corner, the arbor should just barely touch a scrap block that's used as a feeler gauge. When that happens, the table is parallel to the arm.

I start with the back, right-hand corner of the table. Begin by backing off the nut used to secure the bracket so it's just snug. Then lower the arm until the arbor just touches the block. When you can slide the block back and forth with only slight resistance, tighten the nut that holds the bracket in place. Then, without changing the height of the arm, repeat the process at the other three corners.

5. Square Blade to Table

It goes without saying — to get a square cut, the blade has to be square to the table. But actually, there's more to it than that (more about that later). For now, let's just say that squaring the saw blade to the table is the *initial* step in ensuring square cuts.

Start by checking that the clamp mechanisms for the arm, yoke, and carriage are locked. Then *unlock* the bevel lock, grasp the motor, and wiggle it up and down to make sure the index pin is engaged at 90°.



After retightening the bevel lock, set a framing square against the blade. To get a "true" reading, be sure to place the square against the *body* of the blade, not the teeth.

If the blade is flat against the square, there's no need to make an adjustment. If it's tilted away from it (as in detail 'a'), it only takes a few minutes to square up the blade.

As you can see in the drawing at left, this is just a matter of removing the bevel scale to provide access to the adjustment bolts. After *slightly* loosening the bolts, tilt the motor to square up the blade. Then alternately retighten the bolts, replace the scale, and set the bevel indicator to zero.

6. Square Up Arm

As I mentioned, squaring the saw blade to the table is just one part of the "squaring-up" process. The next step is to square the *arm* to the *fence*. This way, the saw blade will travel in a line that's square to the fence.

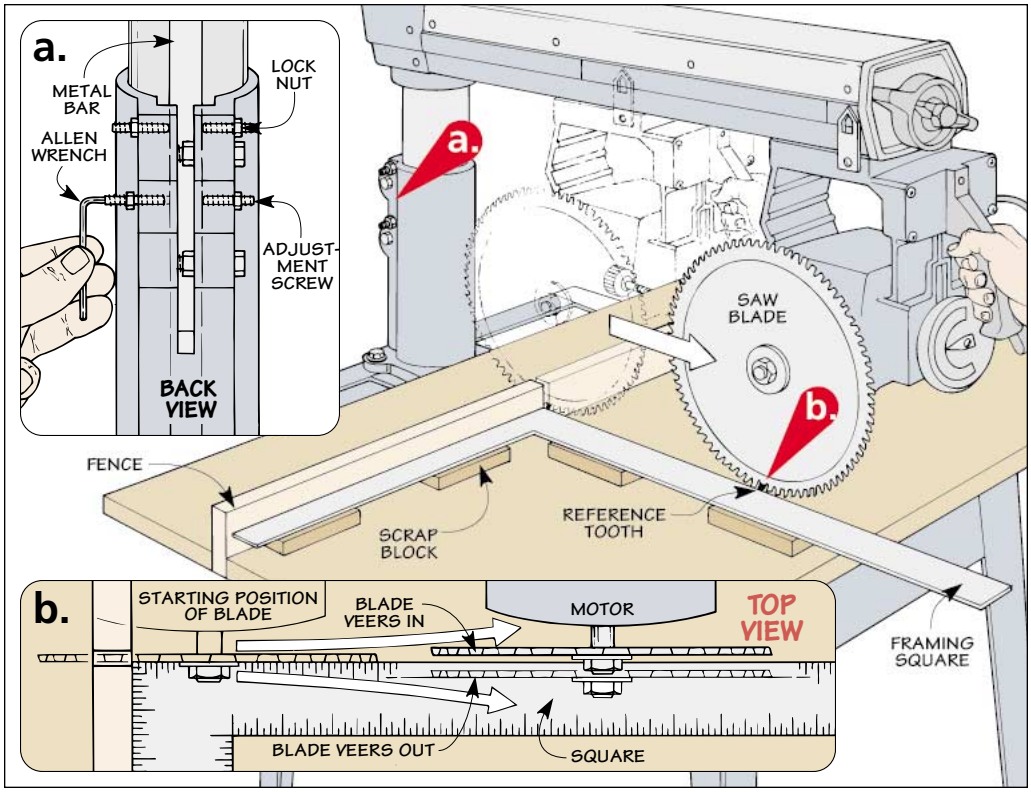
Before you get started, check that the clamp mechanism for the arm is locked. Also, grasp the end of the arm and move it back and forth. This ensures that the index pin that holds the arm at 90° is properly engaged.

The first step is to find out if you even need to make an adjustment. To do this, I make a simple test using a framing square that's resting on scrap blocks. (I'll explain the blocks later.)

Start by placing the short "leg" of the square against the fence, as shown at right. Then mark a single tooth on the blade to use as a reference and slide the square against that tooth. Note: You may have to adjust the height of the blade to do this.

Now slowly pull the blade all the way forward, checking to see if the reference tooth stays in contact with the square. If the tooth scrapes against the square for the entire distance, the arm is square to the fence. If it veers to one side or the other (detail 'b') the arm needs an adjustment. (If the blade moves *toward* the square, the scrap blocks prevent it from "climbing" up on the square.)

To adjust the arm, the idea is to apply pressure against a metal bar welded to the back of the column (detail 'a'). On my saw, this requires loosening some lock nuts and tightening set screws against the bar to nudge the arm one way or the other. Note: Check the owner's manual to find the adjustment on your saw.



7. Check for Heel

At this point, the blade *travel* is square to the fence. But that doesn't mean the blade itself is square to the fence.

Sometimes the yoke (and therefore the blade) is slightly twisted on the carriage. This is called *heeling*. The problem with heeling is the blade "plows" a wide kerf, creating rough, burned edges.

It's best to check for heel near the center of the blade where there's more surface area. So I set a framing square on tall blocks, as shown in the drawing at right and detail 'b.' Note: You may need a tall fence to hold the short leg of the square against.

If the blade needs to be aligned, unlock the yoke and loosen the bolts used to secure it to the saw (detail 'a'). Then swivel the yoke to square up the blade and retighten the bolts.