

# Miter-Saw Tune-up



Keep your chopsaw or  
sliding compound-miter saw  
in peak form

BY JOHN WHITE

**M**iter saws are showing up more and more in cabinet- and furniture-making shops. Although some of the early miter saws weren't reliably accurate, the current generation has evolved into tools capable of furniture-grade precision for joinery and trimwork. One big advantage of a miter saw is that you can get a cleaner cut—especially on long lengths—than you get with a tablesaw miter gauge because you're moving the blade into the stock, not the other way around. The result is less wobble when the cutting edge meets the workpiece. To get consistently clean cuts with one of these machines, whether you own a chopsaw or a sliding compound-miter saw, you first have to tune it up and then carry out periodic maintenance. □

*John White is a contributing editor.*

## START WITH A THOROUGH CLEANING

Begin a tune-up by removing dust and chips from the base of the saw. You can safely use compressed air to blow out the crevices under the saw's table, but don't use it to clean off the rods of sliding saws because the blast of air can force dust past the seals to the bearings. A shop vacuum is the better choice. Take off the blade and clean out the inside of the blade housing and the guard, removing any pitch buildup that may interfere with the guard's motion. Spray penetrating oil, an efficient pitch solvent, on a clean towel and use it to wipe down the guard mechanism and the guide rods for the sliding mechanism. Don't leave excess oil on the rods; wipe them with a dry towel once they are clean. Use light machine oil to lubricate the pivot points where the head rotates when the saw is pulled downward.



**Lubricate with two different kinds of oil.** Use penetrating oil on the sliding mechanism and light machine oil on pivot points for the head rotation.

## MAKE SURE THE FENCE IS FLAT AND SQUARE

Most miter-saw fences consist of an aluminum casting with a large semicircular segment connecting the left and right halves of the fence. The circular part of the casting is a weak spot that can get bent, throwing the two faces of the fence out of line. Check the fence with a straightedge. The left and right sides should be in perfect alignment. If the fence is bent, you have two options to correct the problem: You can try to straighten the casting, or you can add wood shims to the front faces. To straighten the casting, remove the fence from the saw and set it up across two blocks on the benchtop. With the high side of the fence uppermost, press down on it with moderate pressure for just a moment, then recheck it for straightness. Don't use a lot of pressure because most fences are not that stiff, and you can easily overdo it.



### SQUARE THE FENCE TO THE TABLETOP

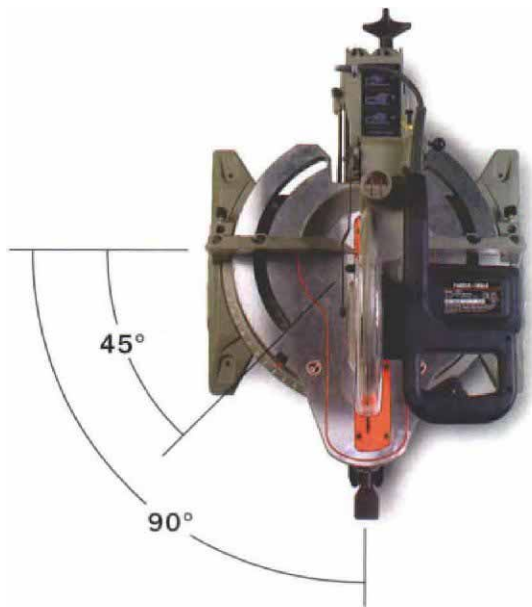
The face of the fence should sit square to the tabletop, but for most types of cuts a small discrepancy won't matter with this tool. If you have to use the saw to make miter cuts on large moldings, you can add a wood face to the fence and shim it as needed to square it to the tabletop. Masking tape makes a convenient shim material because it's thin enough for making small adjustments, and it'll stay in place as you screw the wood face onto the aluminum casting.



**Start with a flat fence.** Slightly bent fences may be pushed back into alignment. White checks the fence with feeler gauges.

**The fence should sit square to the tabletop.** For most tasks these saws perform, this is not a critical condition. Slightly out-of-square fences can be shimmed into alignment with the addition of a new wood face.

## TEST FOR ACCURATE HORIZONTAL ANGLES



**Built-in adjustability.** The two screws on either end of this fence pass through holes that are slotted, which allow you to square the fence to the blade.

Most owner's manuals say to use a square to align the blade to the fence, but I think that approach is a waste of time. You're better off measuring the squareness of an actual cutoff and adjusting the setting as needed. Joint and mark one edge of a board that's 4 in. wide or more. For all of the test cuts, place this edge against the fence and use it to check the cuts with a square.

Correct for out of square by shifting the fence. But before loosening the bolts that clamp the fence to the table, scribe a pencil line at each end of the fence to mark its location. These marks will make it easier to judge how much you move

the fence as you square it up. Once the saw has been properly aligned, set the pointer on the miter-angle scale to line up precisely with the 0° mark.

### CHECK THE 45°-MITER SETTING

To check whether the saw will cut accurate 45° miters, you'll need two scraps at least 3 in. to 4 in. wide and a couple of feet long. As in the tests for square cuts, one edge on each board should be jointed straight and marked as the test edge.

With most saw designs you can only check whether the 45° stops were machined properly at the factory. The saw's turntable is positioned by a pin that en-

gages a series of notches under the table. The notches can't be repositioned, so you're depending on the manufacturer to have properly located them when the saw was made. Make test miter cuts with the turntable swung both to the right and to the left to discover if they're both accurate. As a final test, cut one miter with the turntable in each location. This last test is a good indicator, because in day-to-day shop work, most miter joints are made from this combination of cuts. After sawing, butt the cut ends together on a flat surface and check the resulting corner with a square placed on the outside corner of the joint.

Ideally, you'll find that all three combinations produce 90° corners. If the joint made with one board cut on each side is good, but the joints made with both boards cut on either the left or the right side are off, chances are the fence was not set quite right. In that case you should readjust the fence for square. If the saw can't produce good miter joints in all combinations of left and right cuts, remove the turntable and examine the alignment notches. With luck, you'll find sawdust packed in one or more of the notches, and the problem will be solved with a simple cleaning. Another option is to align the fence to create a good joint on one side of the blade, with a loss of accuracy to other turntable positions.

## ADJUST THE FENCE FOR A SQUARE CUT

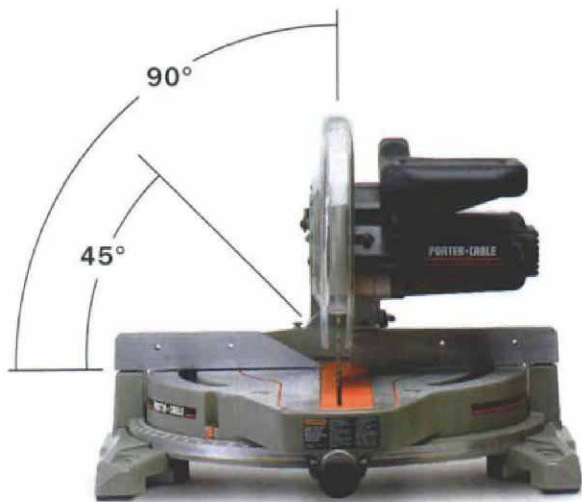


**Ignore the owner's manual.** Joint the edge of a piece of scrap, place it against the fence and make a cut. Check the cut edge with a square to determine the blade-to-fence setting.



**Give yourself a reference line.** Use a pen or pencil to mark the location of the fence on the tabletop before making adjustments, which can easily be made by pivoting the fence.

## TEST FOR ACCURATE VERTICAL ANGLES



**Vertical adjustments are easy.** Two bolts with locknuts act as 45° and 90° stops.

To check the vertical alignment, follow the same procedure used for the horizontal setting, employing a test scrap 2 in. to 3 in. wide and a couple of feet long. Joint one edge until it's dead-on straight, then mark it. This edge will sit flat on the tabletop for all of the test cuts.

Set the saw at both the vertical and horizontal 90° settings and lock them in place. Make a test cut on one end of the scrap and check it with a square. If the cut end isn't square, adjust the stop, which is a simple job on most saws—typically it is a bolt and locknut easily accessed at the back of the saw. Some saws come with a special wrench to loosen the locknut because clearances can be tight.

To make an adjustment, tilt the saw head to take pressure off the stop bolt,

then loosen the locknut. Turn the bolt to correct the alignment, lock it down again and make another test cut. It may take a couple of tries to get a perfectly square cut on the test piece. Once you're there, set the pointer on the

bevel-angle scale to line up precisely with the 0° mark.

With the vertical and horizontal square stops set, you can adjust the stop for cutting 45° bevels. You'll need two boards about 3 in. wide and a couple of feet long. Square up the boards and mark the best edge on each board. Lock the saw head to the 45° vertical stop. Miter-cut one end of both boards, with the boards held vertically against the fence, keeping the designated edges against the tabletop. Cutting the boards vertically gives you a bigger miter to check for accuracy than what you'd get by cutting a bevel in the thickness of the boards. Assemble the joint on a flat benchtop. If the two boards don't form a square corner, it'll probably take several adjustments to get the joint square, but the effort is worth the trouble.



**You need two pieces to test miters.** Scraps at least 3 in. wide are better than narrow pieces to get a good reading on a miter.



**Two wrenches required.** To adjust the 45° and 90° stops, you may have to tilt the saw head to access the bolts and locknuts.

### Troubleshooting at a glance

SYMPTOM	SOLUTION
Rough sawcuts	Replace the mediocre blade that came with the machine with a new 80-tooth crosscut blade
Loss of power, sparks in the motor	Replace the brushes (see the photos at right)
Out of square or off-angle cuts	Tune up settings and stops as indicated



**This brush is still in good shape.** Worn-out brushes can lead to sparks coming from the motor, and they can indicate a loss of power. Replace brushes when they get too worn, which would be about half the size of the one shown here.