

Safe Procedures at the Tablesaw

Guidelines for preventing problems before they happen

BY HOWARD LEWIN

A tablesaw doesn't have a conscience. It couldn't care less whether or not it cuts off your finger. And it will. If you know this going in, then you can guard against it. What I try to do is arm myself with knowledge of what the machine is likely to do and then stop it before it happens.

Kickback, the main cause of most tablesaw injuries, occurs when the board drifts away from the fence and pushes against the back of the spinning blade. As the teeth come out of the back side of the saw, they will actually lift the board off the table and launch it over the top of the blade. When that happens, the board is propelled with a few horsepower of force behind it.

Splitters are designed to prevent kickback, and they do. Yet they cause a great deal of anxiety to me and most of the woodworkers I know. This is probably because the splitters that are readily available in the United States aren't quite up to par. For a splitter to do its job, it has to be the exact width of the blade. If the splitter is narrower than the blade, then it allows room for the board to slide away from the fence. If it is thicker than the blade, it forces the stock into the front of the blade and jams the board.

European splitters, like those on Inca tablesaws, attach directly behind the blade and are curved to follow the blade's arc. The splitter adjusts and travels with the blade, allowing dado and bevel cuts. It is useful, and it works. The splitters on most American saws have to be removed to make these cuts. Often they are not replaced.

As for blade guards, they work fine, except when you really need them. When you are cutting plywood or long boards with wide dimensions, your hand is nowhere near the blade; therefore, it's pretty safe. It's when you have to do detail work close to the blade

Warning: *Fine Woodworking* does not recommend the removal of splitters, blade guards or other safety devices from tablesaws. The author of this article believes that many woodworkers choose to operate tablesaws without such devices. Our observations as editors confirm this. We also recognize that many woodworkers own older machines or used tablesaws that came without these safety mechanisms. In all these cases, it is essential that the safety steps outlined in the following article be taken to minimize the risk of injury.

that you need a blade guard but can't use one. Though splitters and blade guards should work better and should be more widely used, I see little use in pretending that they are.

What is imperative is that you take the necessary measures to ensure safety at the tablesaw. I always use zero-clearance tablesaw inserts, featherboards and push sticks. I keep a well-tuned saw, and I let a few rules guide my work.

- Never stand directly behind the sawblade.
- Make sure the blade is never more than $\frac{1}{8}$ in. above the board being cut.
- Be aware of what the wood is doing at all times. And be ready to react.
- Never back a board out of a cut.
- At the slightest hint that a board is bowing away from the fence, lift it out of the cut and above the blade. Then begin to make the cut again.

To drive a car you have to pass a test. The same is true for flying an airplane or sailing a boat. Most people even take the time to get some kind of computer training these days. But the same people just take a tablesaw out of the box and cut away. It doesn't make much sense. If you make a mistake at the computer, what's the worst scenario—you lose a page, some bookkeeping? But make a

mistake at the tablesaw and the consequences are much greater. Digits don't grow back.

The photos and drawings on the following pages show the basic setups for safe cutting. With these things in mind, you can foresee problems and prevent them before they happen. □

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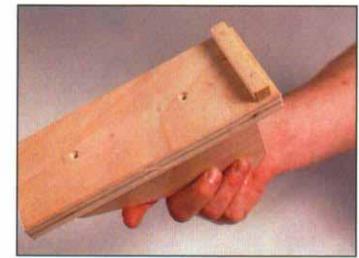
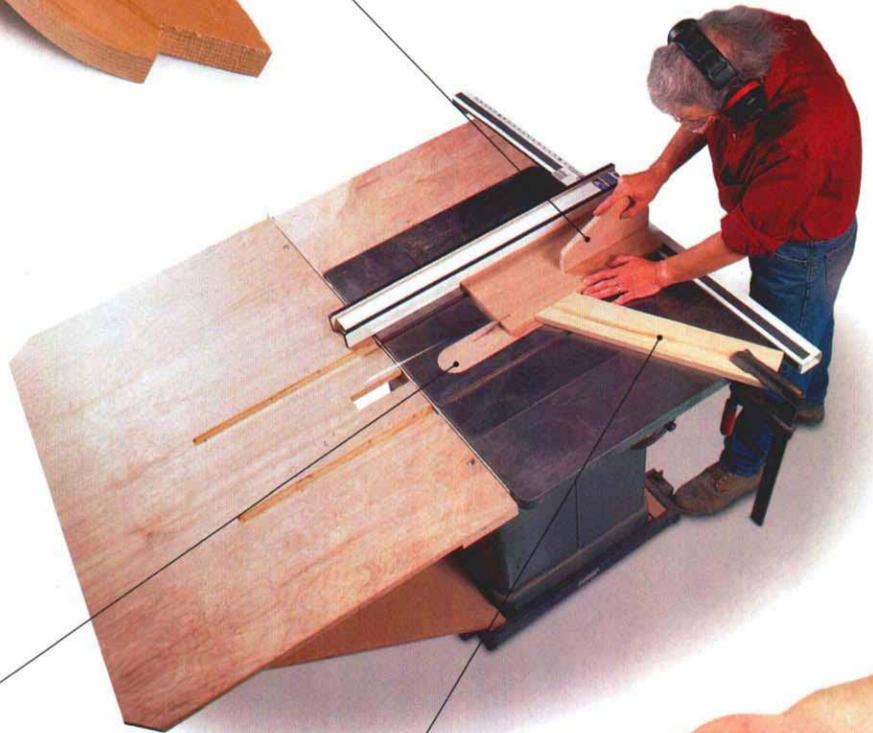
SHOPMADE TABLESAW ACCESSORIES

PUSH STICKS, PUSH PADDLES AND PUSH SHOES

Push sticks lend leverage when guiding stock through a cut. The notch allows you to hold the push stick at about a 45° angle and keeps your hand about 10 in. above the blade. Wider push sticks give a more solid connection. Just make sure the grain runs lengthwise, so it won't break when the notched end passes through the blade. Cut them in bulk, so there's always one nearby. On narrow stock, push shoes hold the stock flush to the tabletop and afford even more leverage. Push paddles offer the most control. If the lumber is heavy or wide, use push paddles to help ease the way past the blade.

Throw no sparks.

When you build a push paddle with dowels, you don't have to worry about the blade catching an errant screw. A layer of sandpaper over the paddle's face will help it grip the stock.



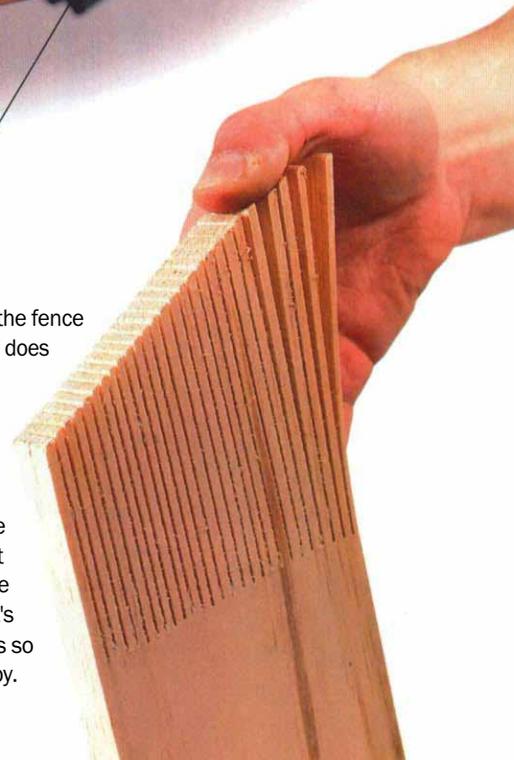
ZERO-CLEARANCE INSERTS

These inserts prevent the loss of thin strips in the wide clearance allowed by most factory inserts.

They also prevent tearout by supporting the stock all the way up to the blade. First make a pattern from the factory cut insert, usually $\frac{1}{2}$ in. thick, and then shape it to a press-fit from the pattern. Drill a $\frac{3}{4}$ in. hole in the insert to serve as an easy finger pull. Change them when you have to switch blades or make beveled cuts.

FEATHERBOARDS

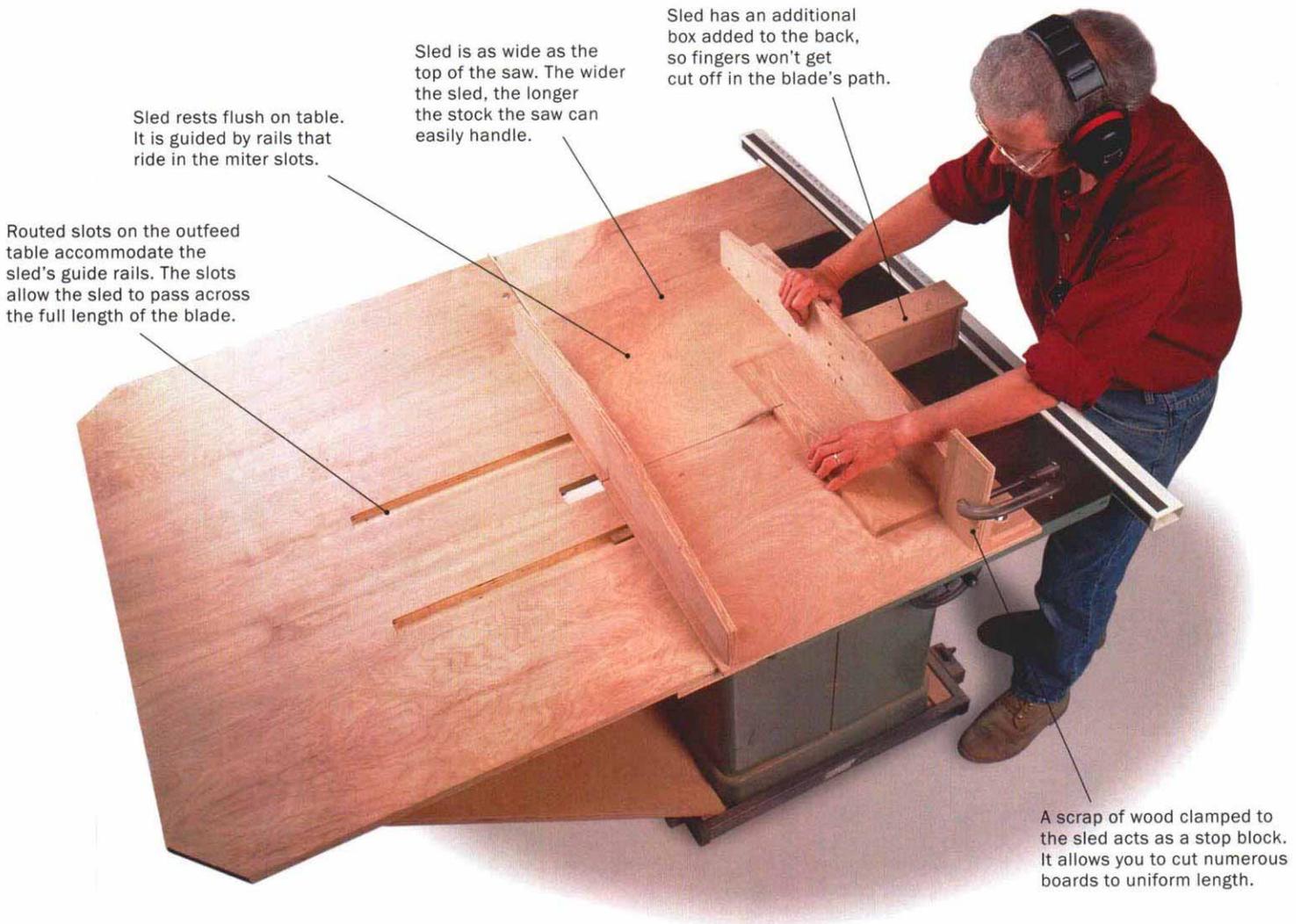
When clamped to the tablesaw, featherboards help the board ride the fence throughout the cut. Even if a board does wander from the fence, the feathered end helps prevent it from kicking back. They are easily made with scrap stock and a bandsaw. The angled end should be cut at 30° to 40° and the feathered kerfs bandsawn at about $\frac{1}{4}$ in. intervals. For larger stock, use wider and thicker featherboards. It's good to make them in various sizes so an appropriate one is always nearby.



CROSSCUTTING

The safest and easiest way to crosscut is to use a sled. It enables you to keep your fingers at a safe distance from the blade (see *FWW* #128, pp. 66-69 to make a similar sled).

A smooth feed rate and a sharp, pitch-free blade with at least 30 to 40 teeth should allow you to crosscut without a glitch. A crosscut sled can also be set up to cut angles and compound miters.

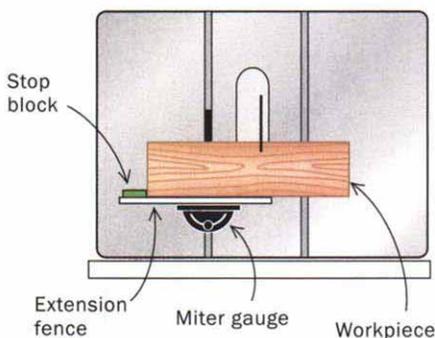


CROSSCUTTING WITH A MITER GAUGE

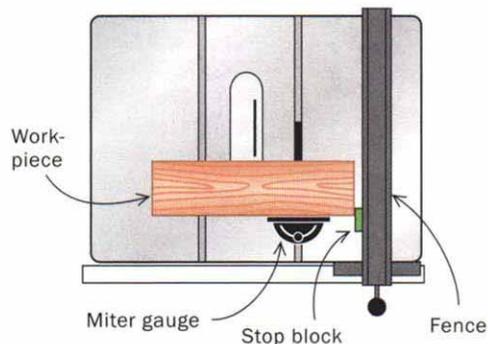
You can also crosscut using a miter gauge with an extension fence screwed or clamped to it. The extension fence will support the board all the way up to the blade.

USING THE RIP FENCE AS A STOP

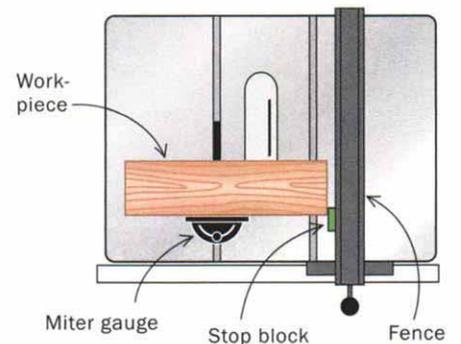
Clamp an extra piece of wood to the fence to act as a stop block. This prevents wood from getting trapped between the fence and the blade, which can cause it to bind and kick back. Never use the fence alone to crosscut boards.



To cut a number of pieces to the same length, attach a stop block directly onto the extension fence.



When possible, use the miter gauge between the fence and the blade.



For trimming smaller pieces to length, move the miter gauge to the left of the blade.

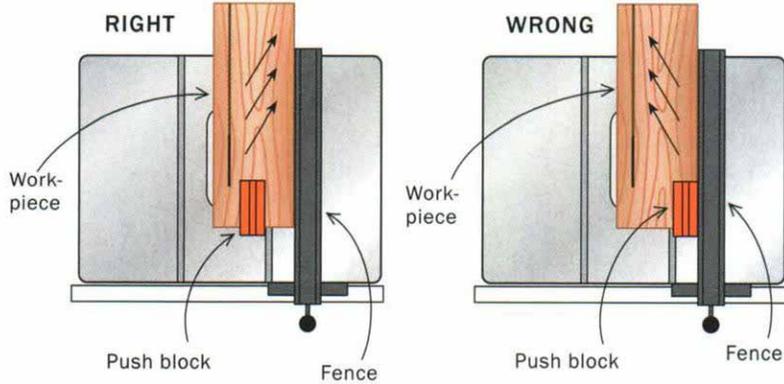
RIPPING

Before ripping a board to size, make sure you have a perfectly flat side against the fence. Do not stop the cut or reduce pressure until you have pushed the material past the blade. If the board begins to drift from the blade or if the board moves in any way that makes you

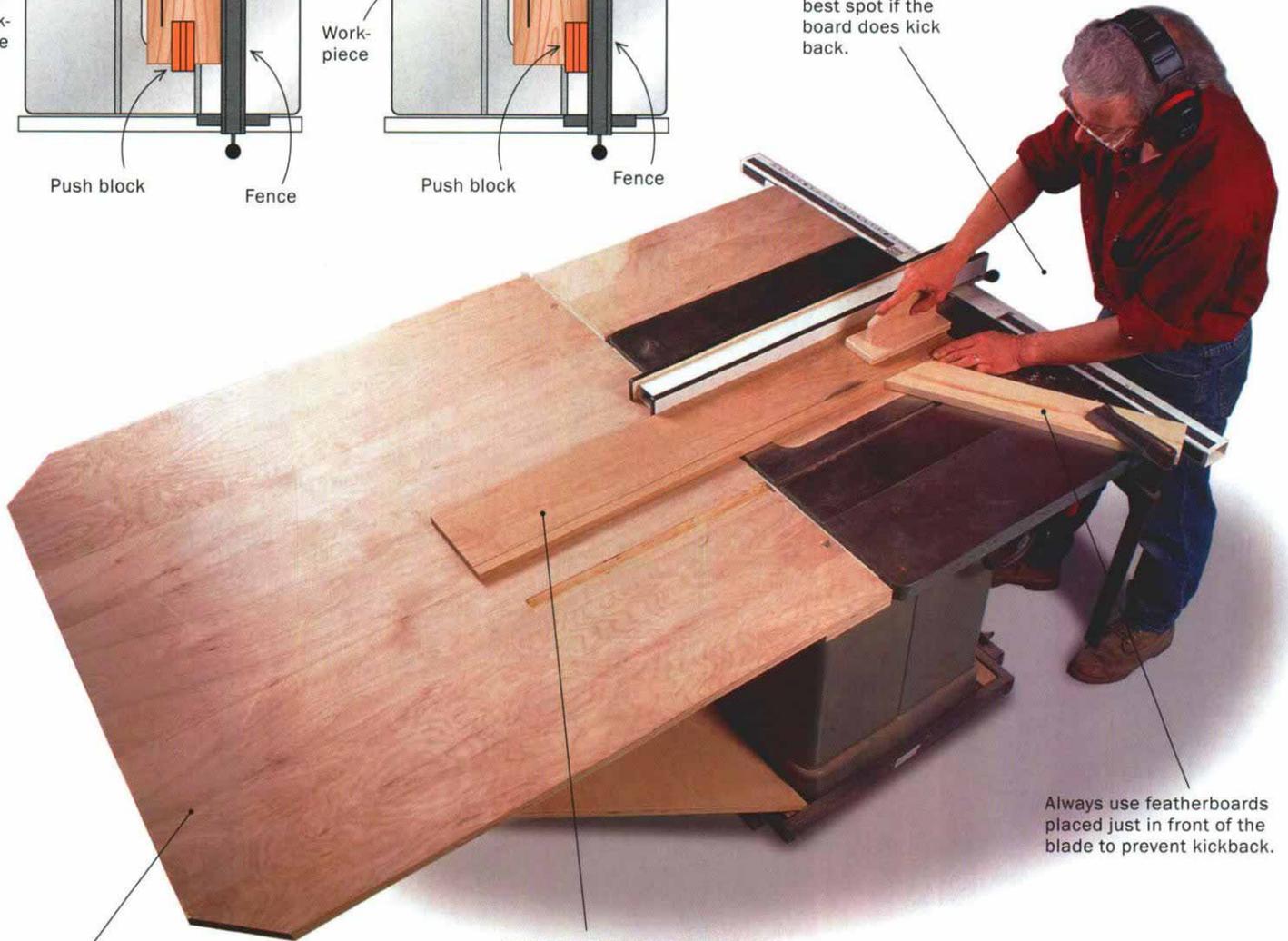
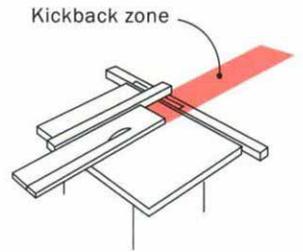
uncomfortable, lift it out of the cut and begin again. A sharp, clean blade goes a long way toward keeping procedures safe. For general ripping, 30 to 40 teeth are adequate. For thicker stock—2 in. or more—use wider kerf blades with fewer teeth.

KEEP TO THE FENCE

When pushing a board through a cut, always apply pressure on the side closest to the blade.



Always stand to the left of the blade, never directly behind the board you are cutting. This is the only way that you can exert the pressure necessary to keep the board against the fence. It also puts you in the best spot if the board does kick back.

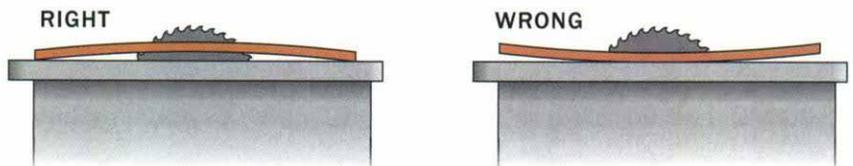


Always use featherboards placed just in front of the blade to prevent kickback.

Extension tables help keep the boards flat on the table and lessen the chance that a board will wander as it moves past the blade.

MANAGING BOWED STOCK

If you must rip or crosscut a board that is bowed or cupped, even slightly, place the board with the concave side facing down.

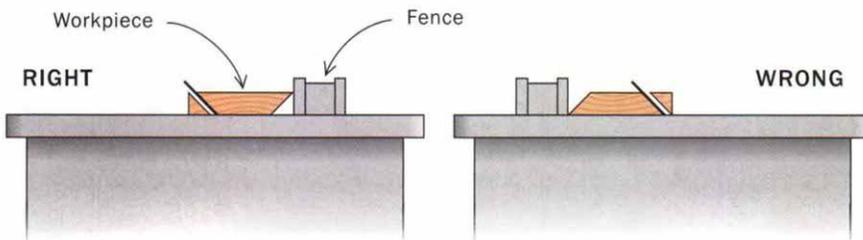


BEVELING

On right-tilting saws, cutting bevels traps the board between fence and blade, which should cause you great anxiety. You can avoid this problem

by moving the fence to the left of the blade. Using zero-clearance inserts is the only way to ensure small cutoffs don't get sucked into the saw.

RIPPING AT AN ANGLE

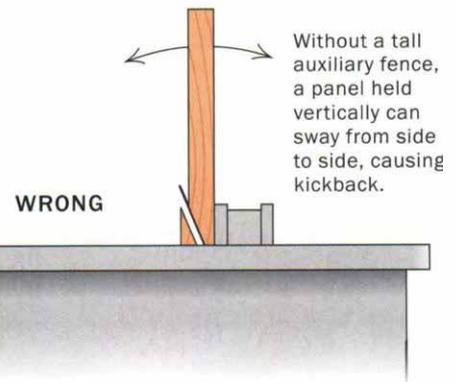
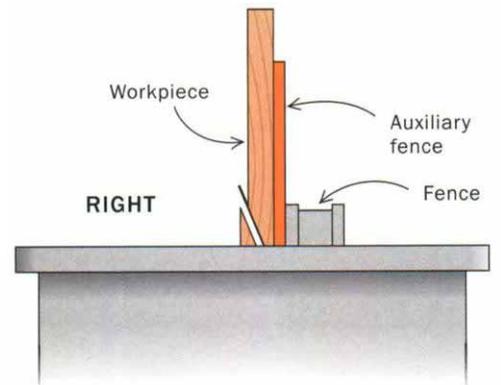


When you move the fence to the left of the blade, the pointy edge of the stock can register off the face of the fence, making for a much safer cut.

With the fence in its normal position, there is a good chance the point of the bevel will slip down below the fence and twist the board in midcut. This can cause severe kickback.

RAISING A PANEL

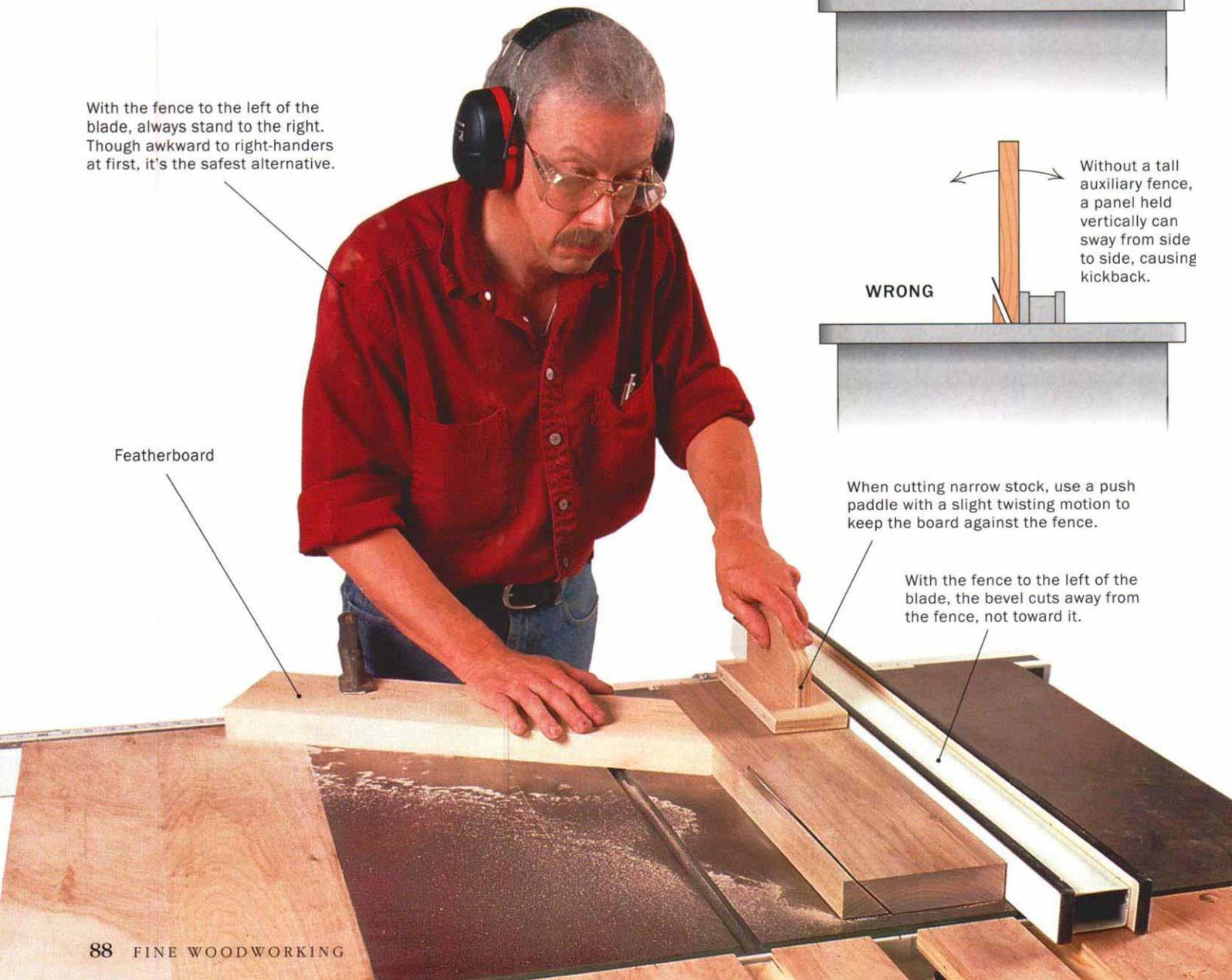
To make raised-panel cuts on a right-tilting tablesaw, you must move the fence to the left of the blade. This way, the blade is angled away from the fence. And you must use an auxiliary fence tall enough to allow a firm handhold on the piece being beveled. Because of the small offcuts you're creating, zero-clearance inserts are absolutely necessary.



With the fence to the left of the blade, always stand to the right. Though awkward to right-handers at first, it's the safest alternative.

When cutting narrow stock, use a push paddle with a slight twisting motion to keep the board against the fence.

With the fence to the left of the blade, the bevel cuts away from the fence, not toward it.

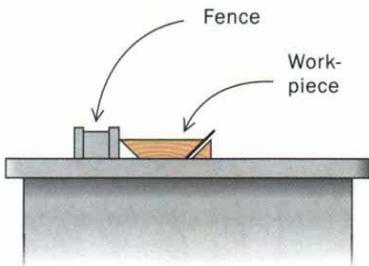


Rabbets, grooves and dados

BEVELING WITH A LEFT-TILTING SAW



When you use a left-tilting saw, there is no need to move the fence to the less familiar left side of the saw. For beveled cuts, the blade is automatically angled away from the fence. For most, the result is a safer and much more comfortable procedure.



Needing a left-tilting arbor is probably not reason enough to buy a new saw, but if you're in the market, and right-handed, it's an option worth looking for.

Powermatic and Craftsman have been making left-tilting saws for a number of years, and a few other manufacturers, Delta and Jet among them, have recently introduced these machines.



RABBETS

When cutting rabbets, an auxiliary fence clamped or screwed in place keeps the blade from digging into the primary fence. On wider stock, where there is more than 6 in. against the fence, a miter gauge is not required—simply run the edge of the board along the fence. You can also use a crosscut slide or a miter gauge to cut rabbets. And remember, never go backward across a blade.



GROOVES

To cut a groove on the edge of a board, an auxiliary fence and zero-clearance inserts are essential. Use a featherboard in front of the blade to hold the stock against the fence. On narrower boards, be sure to use a push stick, and apply downward pressure through and past the blade. Cut the groove as close to the fence as possible.



DADOES

Always dado as close to the fence as possible. Narrow stock requires a miter gauge and a stop block. On wider stock, where there is more than 6 in. against the fence and less than a 4-in. gap between the blade and the fence, a miter gauge is not required. Never dado far from the fence even with a miter gauge. You can also use a crosscut sled dedicated to making dado cuts.