

# mastering the Jointer

Straight, flat, and square stock will get your project off on the right foot. And a jointer can be one of the best ways to get this job done.



For a long time, I got along fine without a jointer in my shop. But now that I own one, I sure wouldn't want to part with it. It saves me loads of time and effort when I'm preparing stock for a project. In just the time it takes to think about getting out a hand plane or a belt sander, you can joint a board for a panel glueup or flatten a workpiece for planing.

**THE TOOL.** It's always seemed to me like a contradiction that such a bare-bones tool can be so useful. Take a look at the jointer in the photo below and you'll see what I mean. It's essentially a pair of long, narrow, cast iron tables separated by a horizontal cutterhead. The infeed table is raised or lowered to control the depth of the cut taken by the knives. And an adjustable fence can be used to keep the workpiece square to the tables.

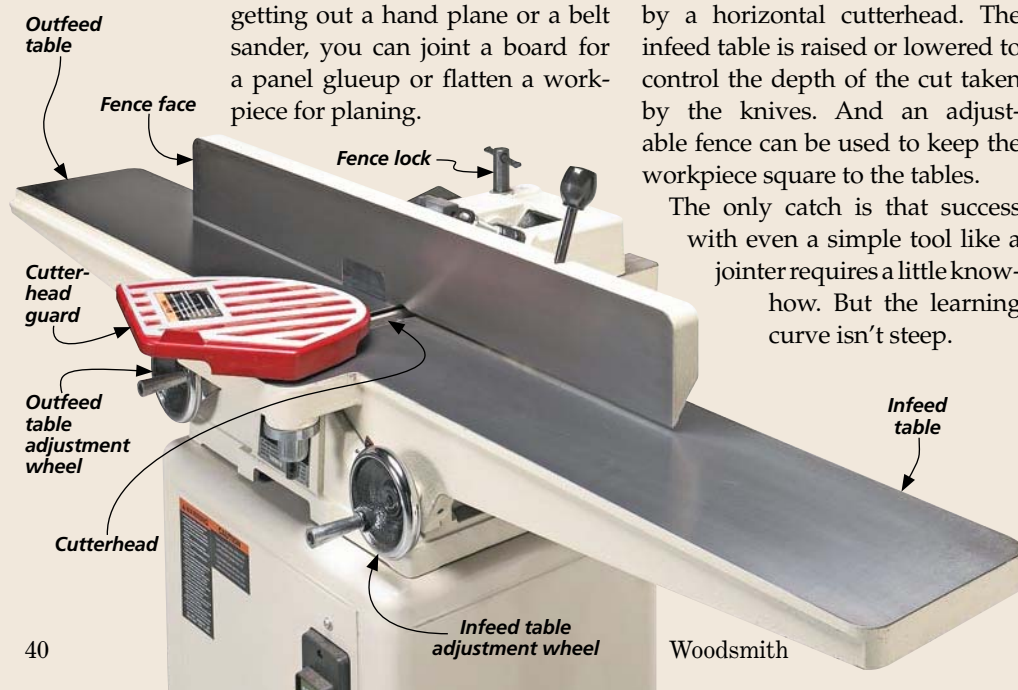
The only catch is that success with even a simple tool like a jointer requires a little know-how. But the learning curve isn't steep.

**TWO JOBS.** A jointer gives you two big benefits. Number one is that you can put a smooth, straight, square edge on a board — called edge jointing. The second plus is making the face of a board straight and flat, or face jointing. Each has its own technique.

## EDGE JOINTING

Edge jointing is where a jointer earns its keep. This might involve straightening an edge prior to ripping, removing saw marks, or jointing a straight, square edge on a board for a panel glueup.

The process is pretty straightforward. You run the edge of the board along the bed and over the cutterhead using the fence for support. As the board passes over the cutterhead, it smoothly slices away a small amount of material. The outfeed table then seamlessly picks up the freshly cut edge. It's almost as easy as it sounds, but there are a



few things you need to know to get consistently good results.

**DEPTH OF CUT.** Shallow passes will still get the job done fast and the quality of cut will be better. So rarely will I take a cut that's more than  $\frac{1}{32}$ " deep — most often much less. If you really need to hog off material, a  $\frac{1}{16}$ "-deep cut is about as heavy as you want to go.

**FIRST, TAKE A LOOK.** Before I put the edge of a board to the jointer, I always give it a good look. What you're looking for are two things that determine how you'll feed the board: the grain direction and the straightness of the edge.

**GRAIN DIRECTION.** For a smooth, chip-free edge, you want the knives to cut "down" along the grain, as shown in the upper drawing at right. Reading the grain direction can sometimes be tricky. When in doubt, just make your best guess. And if you get a rough cut, turn the board around for the next pass.

**WHICH EDGE?** If all boards had straight edges, jointers would see a lot less use. But a crown on one edge and a hollow on the other is often the case. The question is, which is easier to joint straight?

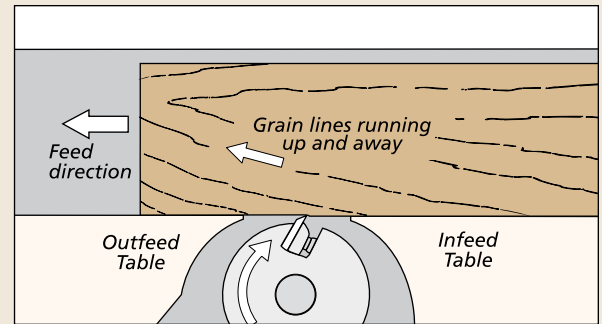
The rule of thumb is to joint the hollow edge (middle drawing at right). This way the board will always have two, solid points of contact with the tables and you're more likely to get a straight board.

**JOINT THE EDGE.** Control of the workpiece is the key to jointing a straight, square edge. The trick is learning to do two things at once; applying downward force in the right spot while also keeping the workpiece snug against the fence.

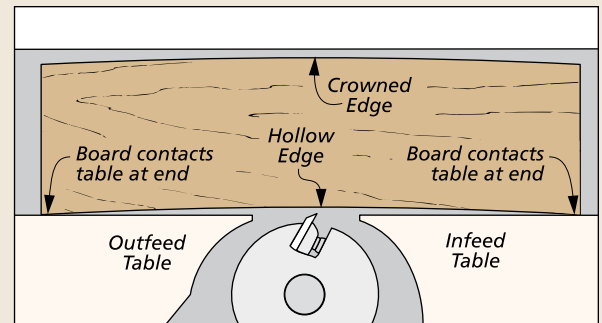
The photos at the bottom of the page show the proper stance and jointing "motion" you want to use. You start by putting pressure on the leading end of the board over the infeed table. As the end passes over the knives, the pressure shifts to the outfeed table. Once you start to establish a straight edge, directing your downward push over the outfeed table will maintain it.

**SIDE PRESSURE.** At the same time, the force you exert to keep the board snug to the fence needs to be properly directed. For boards no wider than the fence, I try to concentrate the pressure through the middle of the board's width and the fence. On wide boards, you'll need to shift the focus to the upper part of the fence. It's pretty easy to tip a board one way or the other and throw the edge out of square. If you find the jointed edge isn't square, just run it through again with a little different sideways push.

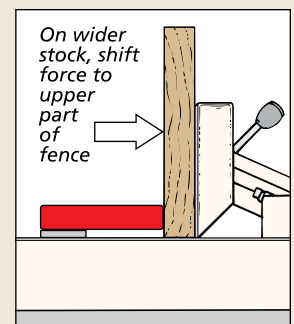
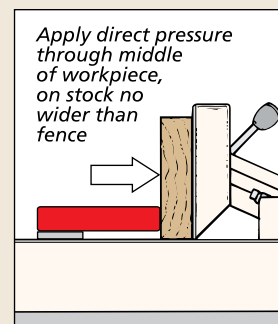
Patience and practice is all it takes to get the hang of edge jointing. And as you'll find on the following page, successful face jointing is probably easier to master.



**Grain Direction.** For a cleaner cut, the grain lines should be climbing up and away as you feed from behind.



**Hollow Edge Down.** Joint a board with the hollow edge down, so you'll always have two contact points.



**Snug to the Fence.** To get a square edge, you want to keep the face of the board tight against the fence.

## How-To: Edge Jointing — The Motion



▲ The left hand applies the downward force and also keeps the workpiece tight to the fence.



▲ Keep pressure on the leading edge of the workpiece as it passes over the cuthead and onto the outfeed table.



▲ When necessary, switch hands to maintain the pressure over the outfeed table. Try not to move your feet.

## Face Jointing

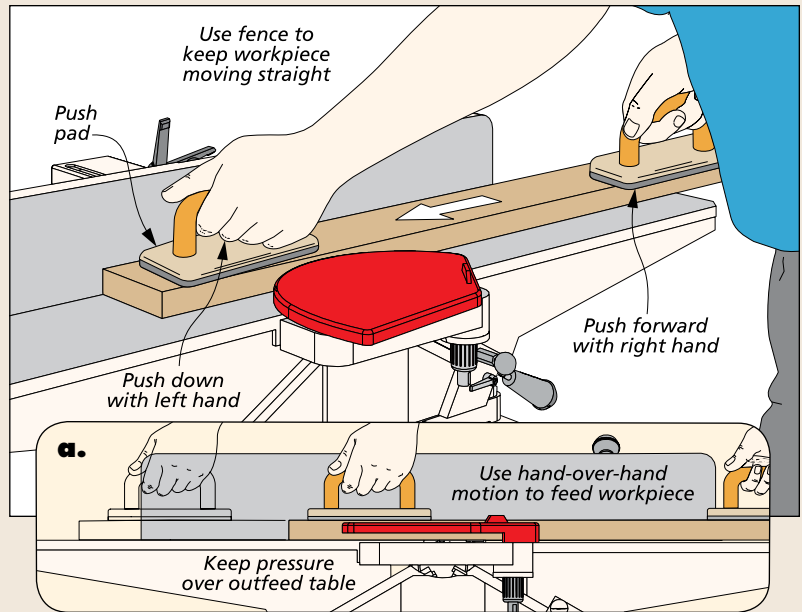
When you want to make one face of a board flat across its width and straight along its length, the jointer is your best option. And since jointing the face square to an edge usually isn't a concern, this can be a bit easier than edge jointing.

**THE BASICS.** Just like jointing an edge, face jointing starts by taking a look at the board. You want to determine the grain direction and whether the board has any serious cupping across its width or bow or twist along its length. Again, you'll have an easier time getting a straight, flat workpiece by jointing with the hollow side down.

**A WIDER BITE.** When face jointing, you're often cutting across a wide surface. A wider cut generates more resistance from the knives. This means that feeding the workpiece steadily and keeping it flat on the tables are a bigger challenge.

So first, push pads or blocks are a must, both for safety and to give you better control. And even though the fence isn't used "for square," it still makes a good edge guide. So I always make use of it. And be patient, multiple light cuts will still get the job done.

**THE MOTION.** The drawing above illustrates how to feed the workpiece. To begin, the left hand is used to apply firm downward pressure while the right hand provides most of the forward push. Then a hand-over-hand motion keeps the board moving steadily over the knives. Once the leading end of the board



passes over the knives, concentrate your muscle power on the outfeed table. On fairly straight stock, one or two light passes will do the job.

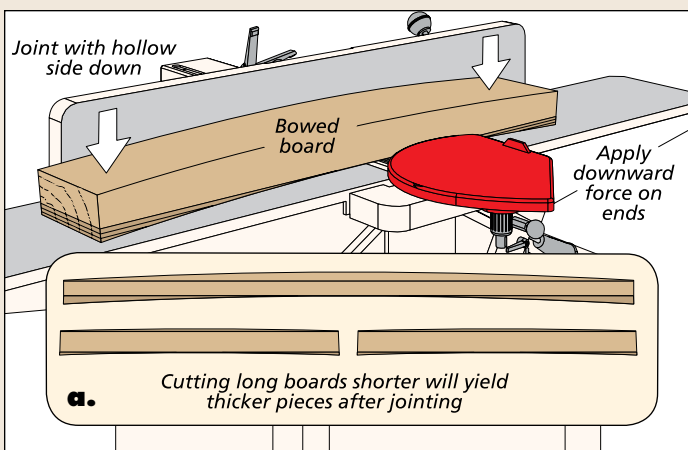
**BOWED STOCK.** The lower left drawing shows how to straighten badly bowed stock. The first tip I would offer here is to cut your stock into the shortest lengths possible before jointing it. A shorter piece will have less bow and you'll be able to joint it perfectly straight without losing nearly as much thickness.

I start by making several passes at the front end of the board followed by several passes at the tail end. With each pass the cut will lengthen. The thing to avoid is pushing too hard on the center of the board and forcing it onto the table. The board will simply spring back into a bow after it's jointed.

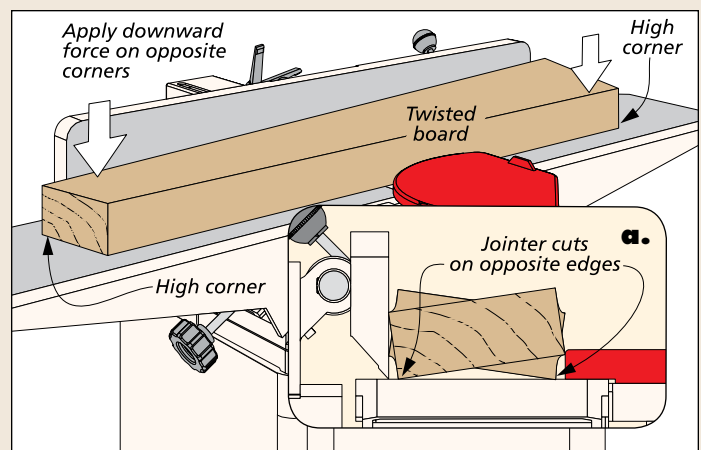
**TWIST.** A board with a twist takes a different approach. You can spot this problem by laying the board across the jointer tables and seeing if it will rock corner-to-corner.

What you want to do to eliminate the twist is identify and work on flattening the "proud" corners. So just push down on the edge or corner of the board as you feed it (lower right drawing). I work on both ends, making longer and longer cuts and checking my progress. When the board lies flat, a final full length pass or two will leave you with a straight surface.

Knowing a few of the jointing "ins and outs" definitely makes a big difference. And a properly adjusted jointer is the other half of the equation. You'll find what to look for on the following page.



**Straightening a Bow.** Start straightening bowed stock with multiple cuts at each end. Avoid pushing down on the center.



**Eliminate the Twist.** To get rid of a twist in a board, you need to push down on the opposite "high" sides as you joint the face.

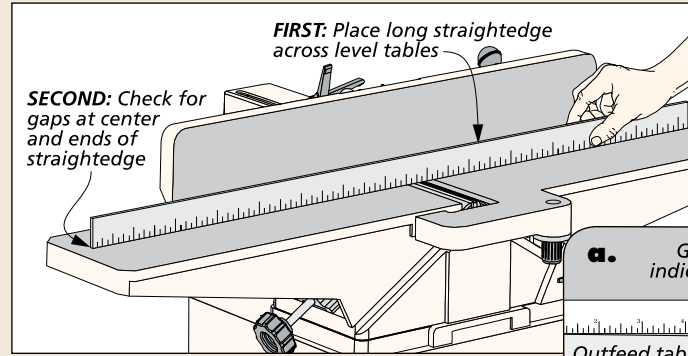
# JOINTER ADJUSTMENTS

If you do everything right and still don't get a straight, square edge or perfectly flat surface, the cause of your frustration might simply be a jointer that needs adjustment.

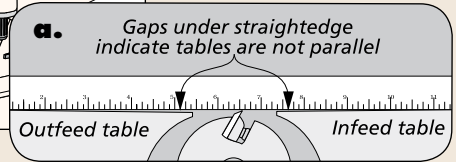
**PARALLEL TABLES.** When you can't get a perfectly straight edge, it could be that the infeed and outfeed tables aren't in the same parallel plane. Check for this by leveling the tables and then placing a long straightedge across them (upper right drawing). If the straightedge shows a gap in the middle or at the ends, you'll likely get a convex or concave edge, respectively. The solution might be as simple as snug-ging up the table adjusting screws. But your best bet is to check your owners manual for advice on this.

**CHECK THE FENCE.** Your jointed edge isn't square? First, check the fence. Most have 90° stops, but this isn't a guarantee. So check the fence with a reliable square just to be sure.

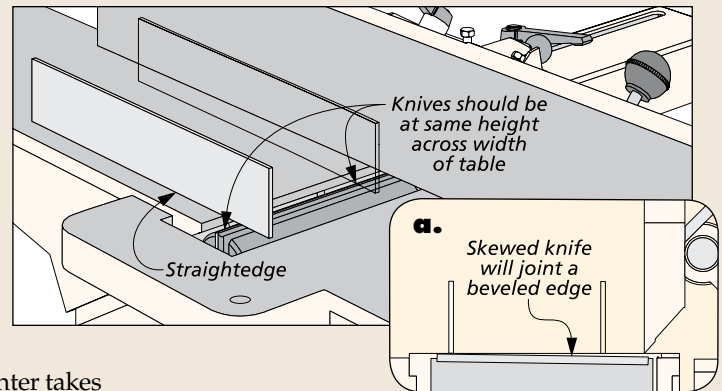
**THE KNIVES.** If you still can't get a square edge, the cause might be that the knives are not installed correctly. All the knives should be at the same height and perfectly parallel to the tables (see middle drawing at right). A knife that's a little high on one side of the table will joint a beveled edge. If this is the case, just reset the knives.



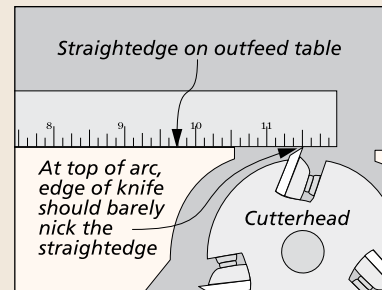
**Parallel Tables.** To joint a straight edge, the two tables need to be parallel. Place a long straightedge across the tables to find a potential problem.



**Parallel Knives.** You can use a straightedge to check the height of the knives across the width of the outfeed table. For a square cut all the knives should be at the same height and perfectly parallel to the surface of the table.



**THE OUTFEED TABLE.** If the jointer takes a slightly deeper bite at the end of the cut (called snipe) or the knives stop cutting halfway through a pass, the outfeed table is too low or too high. It should be set flush with the topmost arc of the knives (lower right drawing). Too high and you get snipe, too low and you get a "climb" cut. A straightedge is all you need to find the problem. **W**



**Outfeed Height.** You can use a straightedge to check the height of the outfeed table. At the top of its arc the knife should make very light contact.

## Shop Tip: Shop-Made Pushblock

One of the challenges to face jointing is applying firm, steady downward pressure while at the same time pushing the board forward across the knives. The simple shop-made push block, shown at right, helps you do this without putting your finger anywhere near the cutterhead.

As you can see at right, a hard-board cleat across the back hooks over the end of the workpiece to provide the forward push. And the wide face and canted handle allows you to bear down to keep it flat on the table.



## JOINTER SAFETY

1. Stay focused and pay attention to the job at hand.
2. Always have the cutterhead guard in place and swinging freely and smoothly.
3. Keep your hands away from the knives by using push pads or blocks whenever possible.
4. Never try to edge joint short (less than 12") or narrow pieces. Likewise, face jointing very thin stock is not a good idea.
5. Don't feed stock too fast or take too deep of a cut. You want the cut to be effortless.