Tune Up Any Jointer

How to align the tables and knives for flawless results

BY ROLAND JOHNSON

Get it straight

Jointer tables must be parallel for boards to come out straight, and a long straightedge or carpenter's level is how you check.

The thought of tuning up a jointer intimidates many woodworkers. So they play a waiting game, tolerating poor performance or dull, nicked knives until the jointer's shortcomings can't be ignored.

What many folks don't realize is it's not that difficult to get your jointer in top-notch shape. There are two keys to a smooth-running jointer: tables that are perfectly parallel (actually, coplanar) and sharp knives that are set to the identical height. A jointer with sagging tables won't cut correctly no matter how sharp the knives are. Likewise, perfectly aligned tables won't make dull knives work better. You need to check and fix both, or your jointer will never flatten or square anything properly.

That process can take a little bit of time and effort, but it can be done with tools you probably already have. To check the tables, I use a long straightedge but a high-quality box level works just fine, too. To set the knives, I use a block of wood and a pencil. Barring major problems, most woodworkers can get their jointer tables righted and their knives replaced in about an hour.

And a couple of equally simple upgrades will make knife-changing even faster. If you want to stick with knives, disposable kits can be installed in minutes. If you want a serious upgrade, segmented cutterheads forgo knives in favor of carbide inserts that hold their edge far longer and can be changed in a minute or two.

Photos: Ken St. Onge; drawings: John Tetreault

No matter what, start with jointer tables that are dead flat and perfectly parallel.

Tables first

A jointer's infeed and outfeed tables must sit in the exact same plane. Otherwise, a board can rock or pivot as it moves over the cutterhead, resulting in a board that isn't perfectly flat or square. It's best to check the tables before replacing the knives because you'll have to raise the outfeed table, which you normally wouldn't do after the knives are set. If there is a problem, it should be fixed before installing new knives.

First, check the infeed and outfeed tables separately to see that they are flat and straight. I do this by raising each table to its highest position and laying a straightedge on top of it to look for gaps of light. Examine both sides, the middle, and the corner-to-corner lengths, to see if there's any wind. If you see gaps thicker than about two sheets of paper, consult the manufacturer about whether the table needs to be flattened or replaced.

To check whether the tables are parallel, I use a 50-in.-long straightedge (Veritas 50-in. aluminum, $85, leevalley.com), long enough to span a good amount of both tables. Place the straightedge to bridge the cutterhead, and check the middle, sides, and diagonals for gaps.

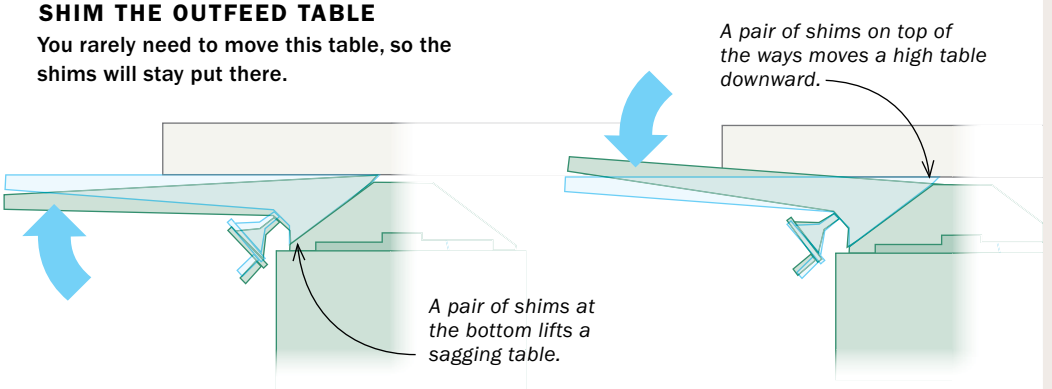
Occasionally, jointers sag at an end or corner. To fix this, you need to raise or lower the position of the table on the

JOINTERS WITH WAYS

Traditionally, jointer tables ride up and down on sliding dovetails of sorts, called ways. Adjusting them is easier than you might think.

SHIM THE OUTFEED TABLE

You rarely need to move this table, so the shims will stay put there.



Start with the gibs. *If you see misalignment, try just loosening and retightening the gib on both tables. It's often enough to fix any sagging, lifting, or twist.*

Shopmade shims. *Use 0.005-in.-thick pieces of brass, which are easily cut with scissors and are available at most hobby shops.*

Insert tab here. *Loosen the gib, insert shims between the ways, and retighten.*

Parallelogram beds are different

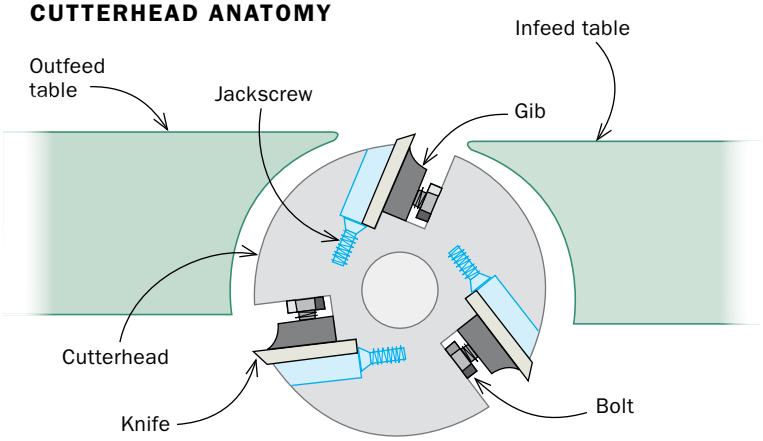
Repositioning tables is easier on a parallelogram design because each corner can be raised or lowered by rotating a bushing that connects the table to the base. To move the table evenly, make the same adjustment on each side.

Rotate just a little. *Raise or lower a corner of the table by first loosening a set screw and rotating the eccentric bushing with a wrench or screwdriver (above). Use the detents or your own marks as reference (below).*

Set the knives

With a clean cutterhead and a fresh set of knives roughly in place, use Tage Frid's classic board trick to quickly get every knife cutting at the same height.

CUTTERHEAD ANATOMY

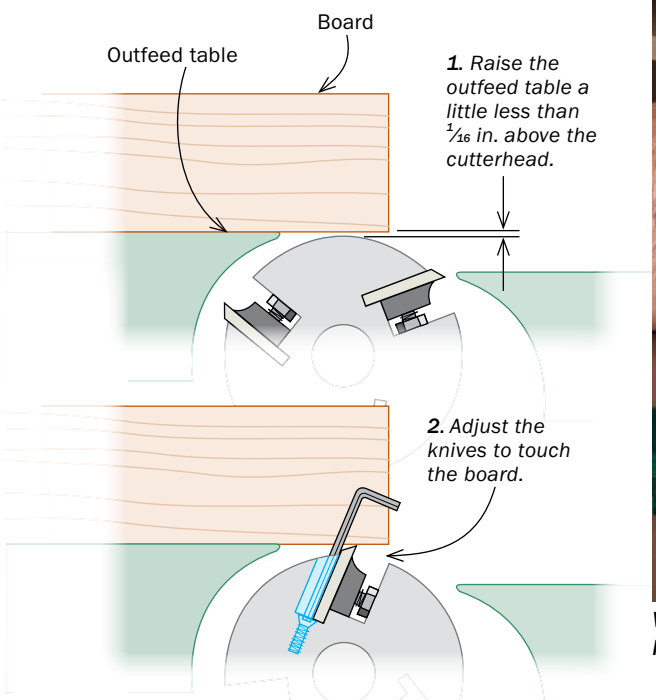


1 MAKE A CLEAN START

Brush out the grime. *Use a thick bristle brush and a bit of degreaser to remove caked-on crud that can interfere with setting the knives.*

Flatten the gib. *Use a diamond plate or fine-grit sandpaper stuck to a flat surface to flatten the gib's face and help it grip the knives evenly.*

2 GET THEM CLOSE



Work off the outfeed. *With the table raised, use the jackscrews to adjust the height of the knives so that each one just grazes a board when the cutterhead is rotated by hand.*

jointer base until any gaps disappear. Making that adjustment depends on whether the jointer is a parallelogram design, or one with dovetailed ways.

On a dovetail-way jointer, use thin metal shims to adjust only the outfeed table. Except for setting the knives, the outfeed is rarely moved, so the shims are less likely to shift or fall out. Before adding shims, I loosen and retighten the metal strip, known as the gib, that sits in the ways. Often this will release tensions in the mechanism that can shift the table back in place and eliminate the need for any shimming.

Determine where to shim by sighting underneath the straightedge, then loosen the gib to slip shims between the ways. Short shims on both sides of either end of the way will raise or lower the table. A long shim centered on the sagging side of the way will fix winding. Snug the gib and keep checking and shimming until the outfeed table is coplanar with the infeed table.

On a parallelogram jointer, you can adjust either table. Just raise or lower the tables by loosening a set screw and turning an eccentric bushing or similar adjustment that connects the table to the base.

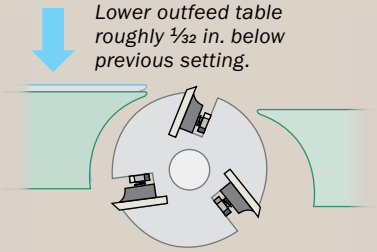
Replacing the knives

To install new knives, start by moving the outfeed table so that it sits about 1/16 in. above

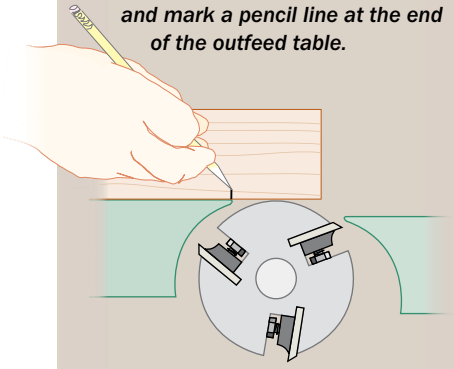
3 USE THE BOARD TRICK TO FINE-TUNE THEM

MAKE THE SETUP BOARD

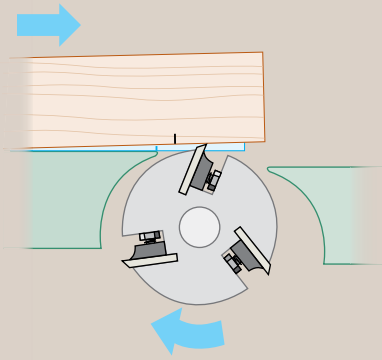
Get low. *Dropping the outfeed just a bit gives clearance for the knives to pick up and drag a board a short distance. You'll use that distance to calibrate the height of each knife.*



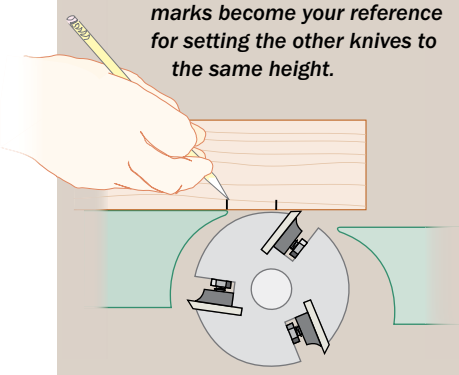
Mark the overhang. *Hang a straight board over the cutterhead and mark a pencil line at the end of the outfeed table.*



Hand-rotate the cutterhead. *Let the knife drag the board forward.*



Mark the drop. *The two marks become your reference for setting the other knives to the same height.*



Work to the lines. *Start at the same mark to check the height of the other end of the knife (above), adjusting the jackscrews (left) until the board moves the correct distance. Then do the same at both ends of the other knives.*

the surface of the cutterhead, or about half the thickness of a knife. That distance determines how far the knives stick out of the cutterhead, and creates a reference surface for setting the knives.

Then remove the knives and install a fresh set. On most jointers, the knives are held in place by a metal gib with a series of bolts that push against the slot in the cutterhead and keep everything wedged in place. Loosen the bolts to pop out the gib and knife, and install a new knife the same way.

Get each knife close to its final height, hang a board with a straight edge over the end of the outfeed table, and adjust the jackscrews until each knife barely touches the board when rotating the cutterhead. Tighten the gibs enough to keep the knives firmly in place until they're set.

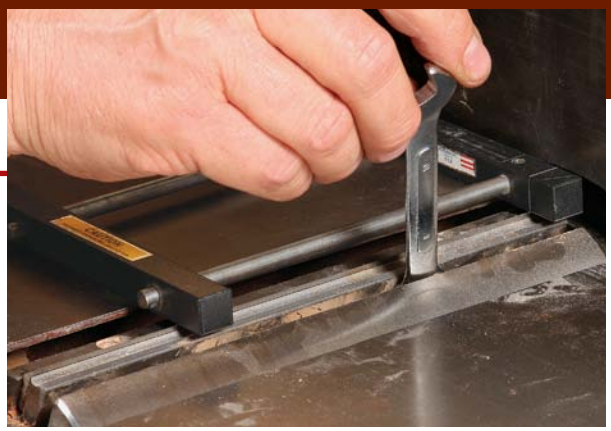
Shopmade setting jig

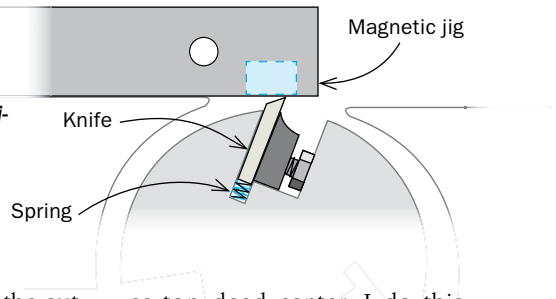
Most jointer knives can be set precisely with a sharp pencil and a straight board. The basic technique is to lower the outfeed table, hang the board over the end, and hand-rotate the cutterhead so that it picks up the board and drags it a short distance. By marking where the

BEST BET FOR SPRING-LOADED CUTTERHEADS

Spring-loaded knives don't stay put, so the board trick won't work. But a magnetic knife-setting jig is just the thing.

Magnetic jointer jig
No. 34099
rockler.com
$32





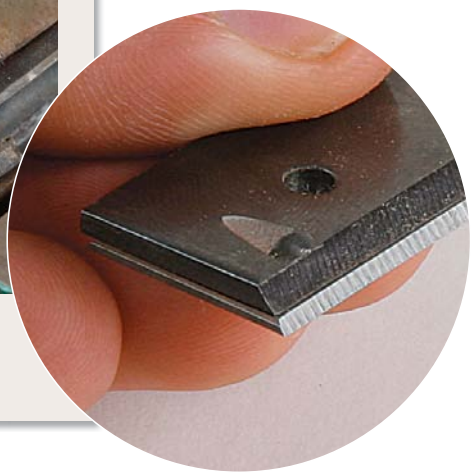
Loosen and retighten. *The jig keeps knives locked in perfect position while you retighten the gib.*

Simplify knife changes with disposable blades

Snap them together. *Attach the knives to the holder and drop the whole assembly into the pocket of the cutterhead.*

If you don't want to spend time setting knives, disposable blade kits from Esta-USA can be installed and set in minutes. The knives snap into a tabbed holder that sits in the pocket of the cutterhead. The tabs register off the top of the cutterhead so each knife sticks out the same distance, eliminating the need to adjust it. The knives are double-edged, but can't be sharpened. Kits for an 8-in. jointer with three knives cost $270 ($35 for just the knives).

Pre-set stops. *Tabs on the holder ensure the knives stick out equally.*



board meets the end of the outfeed table before and after dragging, the board becomes a story stick that can be used to set every knife to the same height.

To set the other knives, just line up the first mark on the end of the outfeed table and rotate the cutterhead. When the board drops, check that the second mark falls exactly at the end. If not, raise or lower the knife using the jackscrews, and keep checking with the board until it does. Repeat the procedure for both ends of each knife, then lock down the gibs once everything's set.

Now, raise the outfeed table so that it's perfectly flush with the highest point in the rotation of the knives, which is known as top dead center. I do this by extending the straightedge over the cutterhead. Raise the table so that the knives barely miss it as you hand-rotate the cutterhead.

Magnetic jig for springs

On a cutterhead that has springs instead of jackscrews, a magnetic jig works better because it compresses the knives down into position. Magnetic jigs also work on cutterheads with jackscrews, but in either case, you'll need to make a scribe line on the outfeed table before using the jig.

Find top dead center on the cutterhead, and then mark the fence where the tip of the knife lines up. Place the jig on the outfeed table, aligning the front mark on the jig with the mark on the fence. The jig will have a second mark on the rear of its bar; use it to locate and scribe a line squarely across the outfeed table. Now, whenever the jig is placed on the outfeed table, the mark in the front shows top dead center. Set each knife so it touches the jig at that point.

To install new knives, place the jig on the outfeed table and align the mark, then ro-

Or trade up for a cutting-edge cutterhead

Segmented cutterheads are taking the woodworking world by storm. Upgrading will give your jointer an edge that lasts 20 times longer than traditional knives, and takes only a minute to pivot and refresh. And for highly figured or dense woods, they cut much better than regular knives. Installation varies with the cutterhead and the machine, but in general the only special tool required is a $25 bearing puller (amazon.com) and a piece of PVC pipe.

You'll start by removing the old cutterhead and pulling the bearings. Then you'll stand the new cutterhead on end and tap on the bearings with the PVC. If you're worried about this step, a machine shop, mechanic, or anyone with an arbor press can do it. Then it's just a matter of reinstalling the new cutterhead, reattaching the pulleys, and adjusting the outfeed table.

Segmented cutterheads start at around $330, but you'll save money and time over the long term because the edges last so much longer.

Online Extra

To watch Johnson install a segmented cutterhead in an 8-in. jointer, go to **FineWoodworking.com/extras.**

EASY TO INSTALL

Out with the old, in with the new. *The cutterhead and bearing housing should come out as a single piece (1). Start by pulling the housing (2) and bearings off the old cutterhead. Tape the new head to avoid cutting your hand, and then tap on the bearings (3). A PVC pipe helps spread out the force from the hammer blows when reattaching the bearing housing (4).*

tate the head until a knife is directly under the top-dead-center mark. Loosen the gib so that the springs push the knife against the jig, while the magnets pull the jig tight to the table. Then retighten the gib to lock the knife in position.

After everything's locked up and dialed in, the outfeed table should be perfectly in place, and you'll be ready to joint boards flawlessly. □

Contributing editor Roland Johnson is a woodworking machinery expert who lives outside Minneapolis.