Concord MakerSpace

Shaper Guide January 30,2026

Shaper vs Router Table

Which to use?

SHAPER

Pros:

Large, heavy machine that can handle thick stock

Large working surface

Big motors can remove material fast

Uses larger cutters for bigger profiles

Cutters turn at slower rpm's, less likely to burn, less vibration, quieter operation

Fences operate independently allowing for support of offset cuts

Good choice for accuracy and high volume production work

Good choice for cope and pattern

Cons:

Setups are time consuming due to precise fence alignment, cutter installation, and safety equipment.

Bigger cutters mean safety is a major concern

Cutters usually cost more than router bits

ROUTER TABLE

Pros:

Many router bits have guide bearings, making setups easier

Good for small stock, light cuts

Cons:

High rpm's are noisy and may cause burning and vibrations

Most router tables have a single piece fence (no offsetting)

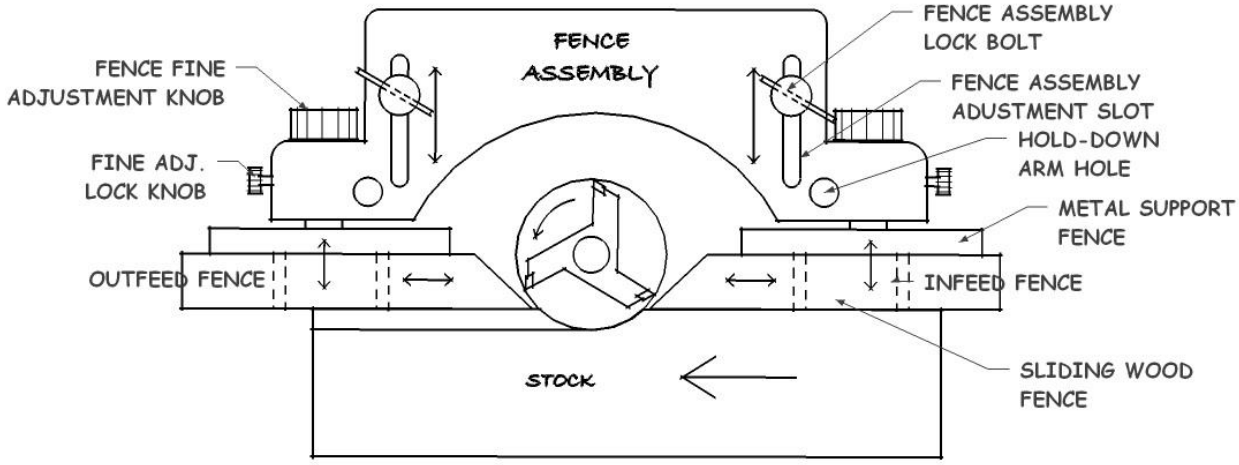
Router tables tend to be light weight and light duty and have a small working surface.

Height adjustments can be hard to make depending on the router

Not all routers fit all tables

Safety:

- **Familiarize yourself with all the aspects of the shaper before using it. Read through the manual before attempting to install cutters or to machine stock.**
- **The wood must always be against a fence or held securely with a jig or attached to a pattern. To avoid kickback, stock must be 12" or longer**
- **Use the fence system <u>or</u> the miter slot, never both at once.**
- **Use hold-downs whenever possible.**
- **When coping narrow door rails (i.e. the top and bottom cabinet door rails), use a jig in the miter slot and clamp the wood to the jig. The shaper bit wants to pull the material into the cutter…so never try to hand hold a cope!**
- **Make sure to have plenty of scrap stock (same thickness!) ready for tests cuts for machine setup. Test pieces should be at least 4" wide and 15-20" long**
- **Above all, take your time, check and recheck that bolts and nuts are tight, rotation is correct. Go over in your mind exactly what you will be doing and when.**



JET JWS-22CS WOOD SHAPER ASSEMBLY

TOP VIEW

Setting up the shaper:

Start by unplugging the power supply. Use the crank to lift the spindle as high as it will go. Lock the spindle rotation. If needed, install the correct size spindle or router collet. Remove or insert the correct size table rings. Check to see if the spindle speed is what you need.

Note: shaper cutters can spin [forward] counterclockwise (ccw) or [reverse] clockwise (cw). Most applications use [forward] where the cutter is turning ccw and the stock is fed from the right to left. These instructions will assume ccw and right to left feed. The rotation will always be [forward] ccw when using router bits.

Router Bits:

Install the bit in the ½" or ¼" collet and tighten the nut. Unlock the spindle. Follow the Align the fences instructions below. If the router bit has a bearing, bring the fence faces even with the bearing (use a straight edge), then move the **fence assembly** back a few thousands of an inch and lock in place. This will guarantee that the material will always touch the bearing thereby cutting to the bits intended depth.

Shaper Cutters:

Slide the cutter [ccw] onto the spindle as low as possible (so it's near the main bearing). Add spacers or bearings to fill up to the lock ring. Make sure the lock ring can: 1) lock onto the spindle shaft and 2) the screw will tighten everything in place. Use shims if needed. Before unlocking the shaft, attempt to turn the cutter by hand to make sure that it is tight on the spindle. Unlock the shaft and lower the spindle below the table so the fences can be set up.

Align the fences:

1. With the spindle below the table, loosen the **fence assembly** lock bolts and move the fence assembly over the spindle opening.
2. Temporarily tighten in place.
3. Check with a straight edge to see if the fences are in the same plane. (Note: The fences are always parallel but not always in the same plane.)
4. If they are not, unlock one of the fine adjustment knobs and adjust the fence in or out to match the other fence. Tighten the fine adj. lock knob.
5. Loosen the screws for the sliding wood fence and slide them both back away from the cutter.
6. Raise the cutter to the approximate cutting height for the project.
7. Position the **fence assembly** so that the cutter is protruding beyond the fence. This will be the cutting depth.

8. Slide the wood fences up to about ¼" away from the cutter and lock in place.
9. Carefully measure and adjust the cutting depth by moving the **fence assembly** in or out, now lock the **fence assembly** in place.
10. Carefully measure and adjust the cutting height and lock the shaft height with the lever near the height adjustment wheel.
11. Give the shaft a spin to see if the cutter can turn freely. Adjust if necessary.
12. IMPORTANT: Before going to the next steps, check over the machine to make sure that nothing is loose and all locks are tight and the cutter can turn freely!

Fine tuning the setup:

Note: This is not the last step in the process. This portion is to fine tune so the cuts are exactly as needed. There is no safety equipment installed so use extreme caution. Work slowly, and patiently.

1) Attach the dust collector, plug in the power
2) Power up the machine [FORWARD], turn on the dust system.
3) Take a test piece of stock and hold it against the infeed fence
4) Push the board into the spinning cutter so the leading end is about ½" beyond the center of the spindle.
5) Withdraw the stock, shut off the power.
6) Measure to see if the cut is the correct height and depth, move if needed. (Note: To adjust the fence for depth of cut at this stage, loosen one side of the **fence assembly** only and tap the assembly in or out to move it slightly. Don't touch the fine adjustments, moving those will misalign the fences.
7) Each time you move the fence or change the cutter height, check to see that the cutter is still able to turn freely.
8) Continue to do the steps 1-7, making changes only when the spindle is not turning and the power is unplugged. (Note: to get an accurate reading of depth and height, you may need to present a fresh, unmachined edge to the cutter each time.)
9) Once the cut is correct, move to STEP A or STEP B

STEP A: If the cutter is removing only some of the board edge and there will be material directly touching the outfeed fence as the piece is machined, this portion of the setup is complete, skip over STEP B and move on to the Final Stage.

STEP B: If the cutter is removing ALL the edge material, the outfeed table must be adjusted outward so that it supports the new edge. (IMPORTANT: Not supporting the edge will allow the cutter to grab the rear end of the board and suck it into the machine…fingers may go with it!) [Figure 9 shows fences in the same plane.]

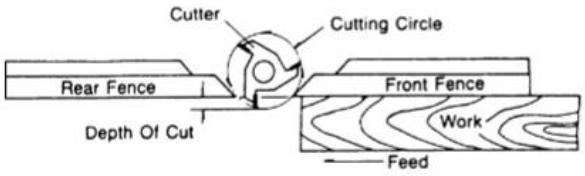


Figure 9

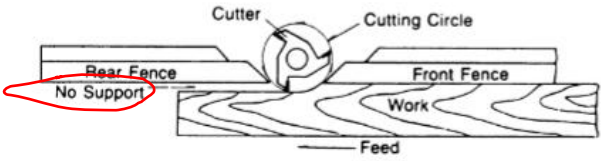


Figure 10

[Figure 10 shows the cutter removing all the edge and leaving no support on the outfeed fence.]

[Figure 11 shows the outfeed fence moved out and is now supporting the cut edge.]

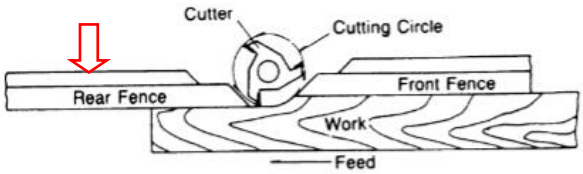


Figure 11

Source: JET JWS-22CS manual page 11

1. Begin STEP B by turning on the power[FORWARD] and starting the dust collector
2. Take a fresh test piece and place it against the infeed fence push it into the spinning cutter and **stop** when the leading end is about 3" beyond the spindle center.
3. Very carefully back the piece away from the cutter making sure you are always pushing tightly against the fence. Shut the machine off.
4. With the cutter at rest, push the piece back into position as before and hold it there.
5. Look at the distance between the outfeed fence and the fresh cut. Unlock and turn the outfeed fine adjustment knob so that the fence now just touches the new edge. Lock the fence there.
6. After each adjustment check to see that the cutter is turning freely. Go on to the Final Stage.

Final stage:

It's now time to install hold-downs and/or featherboards. The purpose of these is so the material is always held in just the right spot all the way through the cut. Power feeders are the best but barring that, hold-downs work well. The hold-downs for the JWS-22CS are strips of thin springy metal; they are bolted to a rod that's bolted to the fence assembly. The metal strips are positioned so that they exert downward pressure on the board as it is passed through the cutter. There is one for the infeed side and one for the outfeed. Place them as close to the

cutter as possible but far enough so that they can't hit the cutter on spring back. A magnetic featherboard can be placed against the edge that won't be cut. This helps keep the board against the fence.

Final check:

Check everything over before you run the stock, spindle height locked, all fence pieces locked, hold-downs securely in place, dust hooked up, cutter turning freely and in the correct direction. There are many locks, nuts, bolts, moving parts…CHECK THEM ALL!

Tip: If you are running long stock, move the machine out so you can use the MakerSpace adjustable height table(s) to extend the infeed and/or outfeed.

Notes on the Jet JWS-22CS Manual:

- Figures 12-18 show the spacers on the shaft being used as a rub collar. Guide ball bearings are sold for this purpose or you can simply adjust the fences to control the depth of cut. Using the spindle spacers as rub collars can cause burnishing or worse, burning.
- Page 9 Arbor removal and installation – make sure the shaft and spindle are clean before installing, otherwise, the spindle may wobble.
- Figure 15 shows a piece that is too small to be on the machine, the safe way to make small moldings is to start with a wide board, profile both edges then rip the moldings off of the board.
- Nowhere in the manual is there a reference to the fact that this is a two speed machine. Figure 2 shows the belt on the smaller, lower shaft pulley, this is the faster of the two speeds. Use fast speed (9,000 rpm) for router bits and small diameter cutters. Use slower speed (7,000 rpm) for bigger cutters.
- The section "Using the Starting Pin" has a caution for good reason, this way of doing curved work is very tricky and is beyond the scope of most woodworkers and is not covered here. Learn as much as you can before you attempt any of this kind of freehand work!

Other references:

Use this QR code to get the JWS-22CS manual:

Jet JWS-22CS Manual

There are plenty of YouTube videos about the shaper but most of them talk about the wonderful array of cutters you can buy. These two give you a good overall look at the shaper. Their machines are massive and have great jigs and safety features that are not on the JWS-22CS but you can get a good idea of the setup and operation of a shaper.

Patrick Molzahn Shaper Setup

Jamie Ward Shaper Setup

Note: My browser will not go directly to these two videos, click on "BROWSE YOUTUBE" to get there.