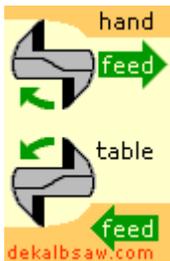
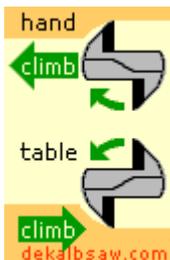


Router feed direction



What direction should you feed a router? In normal use, feeding goes opposite to rotation direction. Pulling against rotation gives you just enough resistance to maintain control and avoid kickback. The hand router is pulled along a stationary piece of wood. It points away from you and rotates clockwise. It is shown here pointing down, as if we could see through the machine. In contrast, the table router points up in a fixed position. You maneuver the wood against the bit and slide the board past it. The bit faces up toward you and the way it turns is counterclockwise. Before you even commence routing, put a spare bit up next to the wood to visualize which way it will turn. The spin is harder to see once it gets going. While you are switching back and forth from a hand to a table model, you only need a moment's pause to observe which way it turns.

Climb cutting and kickback



The opposite of normal feed direction is called climb cutting. This technique causes a bit to pull you in the rotation direction. It tends to bounce erratically or walk out. The climb cut method is more suitable for mechanical feed on a shaper. Don't imagine you can muscle in to dampen kickback manually. The force is not with you. Climb cutting a small piece and letting it pull the same way the bit rotates is dangerous. Wide bits should cut in normal feed direction. Restrict use of the climb cut method to light passes only, pulling a straight bit along large stabilized pieces.

Preliminary checkpoints are a good practice. Making a test cut first in a scrap will let you preview how much resistance you can expect to feel when you begin routing.

Catching

Much of the time, you can avoid catching by trying not to go too deep all at once.

It is safest to proceed in several incremental shallow passes; probably no deeper than 1/4 inch on each trip. Do not plan to start a bit turning inside a tight little pre-drilled hole where catching is possible. First reduce the excess stock. Drill out and expand the entire cavity. Clear out the waste as far as you are able without actually touching your drawn lines.

To resist bouncing wildly if stock vibrates, you can't rely on manual guidance or the sole plate alone. Try to anticipate and prevent unwanted movement before it can happen. Use clamps to hold down the wood on the table. Before even touching the wood, a router bit ought to spin much faster than a drill can turn. Spinning too slowly is both ineffective and potentially reckless. A skinny bit may catch. If you hear the cutter struggling, trying to force it would be dangerous. When it struggles repeatedly, the bit is getting used up and the possibility it may catch worsens.

Give yourself time to read the wood critically. Consider your setup and decide whether flipping the work gives you a safety advantage. Mark the places where you aim to begin and stop by positioning masking tape for visibility. The strategy is one of planning ahead and predicting where the unexpected forces of freehand routing are lurking. This could mean rehearsing the steps in your mind's eye. You might like to prepare a simple sketch of your plan, or examine pictures of [routing end grain](#).

Push pads for safety

If kickback happens to a portable model, at least your hands are up on the handles. Routing on a table may put hands near the cutter head. Push pads help to control and hold down the stock. They can also shield your fingers. Manipulate small pieces with caution. Consider changing the order of production steps. If there are many small pieces, leave a group of components connected together as you shape as much as possible, then cut them apart later. Separated parts are more vulnerable to vibration.

Full body bits

Anti-kickback bits have an additional safety feature for manual feeding. Instead of a winged shape, the head is round enough to brush the stock as it turns, preventing too deep a bite. Shoulders are built out toward the periphery, but there is a slim gap before each flute. A narrow constricted opening may make it tricky to sharpen well. Anti-kickback bits are heavy. They should have a big shank and be used on units with adequate power. This idea is avoiding a few, but not all the dangers. Vigilance is still the right attitude. Automated equipment doesn't have quite the same hazards, so CNC bit designs have fewer restrictions.

Raised panel bits

It isn't safe to use bits more than 1 1/2 in. wide by hand. The width creates a

gyroscopic force resistant to movement. This causes it to become less agile and responsive. If it digs in or bounces off a hard spot, strong arms cannot control it unwaveringly. Shapers are safer for that. Massive raised panel bits require slow RPM. A shaper has powerful horsepower to keep giant wing cutters going without straining the machine.