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Gary Rock, Jeff Cormier, Chuck Middleton

**Mentoring Program** - If you have a project, a problem in any woodworking area, these members have volunteered to help. Give them a call. Jeff Cormier: 582-3278; George Kuffel: 478-2707; John Marcon: 478-0646; Chuck Middleton: 625-3134; Gary Rock: 433-1679; Eltee Thibodeaux: 436-1997; Dick Trouth: 583-2683. Each have years of experience and knowledge.

#### June Meeting Highlights

Jeff and Mary Cormier were our hosts this month at their fine shop. Mary made those delightful sausage and biscuit things that I always eat too many of. Thanks to both of them for such a great meeting and a great place to visit.

The safety discussion centered around the issue Jim Couvillion had with his shaper. After several members talked to Jim about the incident, it was pretty clear that what happened was a so-called climb cut that went wrong. See the article later in this issue on how to do this (if you must) with a higher safety factor.

Jeff asked about how to create zero clearance inserts for a table saw when the standard 10 inch blade, at say a 45° angle, could not be lifted to cut the proper angle without encountering the underside of the table. The solution that George Kuffel uses is to simply use a smaller blade to cut the slot. On his Craftsman table saw, he mounts a 7-1/4 inch blade, bandsaws the insert blank, positions the insert in the table, turns on the saw using a 45° angle and lifts the blade. Because of its diameter, it clears the throat of the blade opening and cuts the slot correctly. Then he replaces the 7-1/4 inch blade with the regular 10 inch one. On some saws, you may have to go down to a six inch blade because of the saw throat. But this worked perfectly with my Bosch table saw.

There was also some discussion on kickback and the pluses and minuses of the Saw-Stop table saw products and why the technology is not used with more table saws. There are three basic reasons. One is that the technology requires considerable redesign of the saw, it is relatively expensive to license and if the implementation by a licensee fails to work properly, the manufacturer has a real legal problem. Tom Bergstedt cited the suit where a manufacturer was successfully sued for NOT having the technology. The bottom line is that the Saw-Stop saw is about \$100 more expensive than a conventional saw of the same class - about the price of a replacement cartridge for the Saw-Stop.

We had lots of Show and Tell this month with Don Elfert showing us a compass trammel, precise to 1/4 inch, a precision taper jig with scales to show the feet per inch cut and a wooden hamburger press that was really cool. We

kidded Don a bit about how to make smaller hamburgers, but this would work very well. Good job, Don.

J.W. Anderson brought a lovely spalted bench as the Bring-It-Back item (which Barry won - first time win, in fact).

Mr. Thibodeaux showed a neat laminated box of cedar and walnut. Jack Stegal showed photos of a friends set of power tools for sale - contact Jack if you are interested. Ray Kebodeaux had a turned billy club and a set of walking canes, one of which was of balsa and another of sassafras. I really liked the balsa one.

Joe Comeaux brought the templates of a childs toy motor cycle from which he is building at least two examples for relatives and promises to bring one in the near future. Pie Sonnier also brought one of his beautiful creations - also a motor cycle - a soft tail Harley of cherry, maple, walnut, osage and purple heart.

Tom Bergstedt, who's shop we meet in July, showed off a well done salt keeper of cherry, ash bowls and water oak. Gary Rock had a gorgeous oak burl bowl with lots of open spaces. When pressed to say how he does this fine work, he said that after the outside shape is refined, he tapes up the bottom so can very carefully remove the wood from the inside of the bowl. Gary also showed off a "long" bowl, describing the technique of creating a round one then carefully cutting away some of it to provide the illusion of length.

Jim Gill, a new member, showed off a few of his great looking bow fish nets made of laminated maple, hickory and walnut. These were things of beauty and careful workmanship. While they are quite functional, I would almost hate to put one in the water of some salty bayou - very good work, Mr. Gill.

One late discussion was to how to color wood glue. As Tite Bond and the rest are reduced by water, you can mix a solution of up to 5% water with a dye product into the glue. The Ritz Dye products are likely the best for this.

Coming Up . . . Saturday, July 10, 9:00 A.M. at the great shop of Tom Bergstedt. See the shop, see the big Wood Miser and perhaps take a tour of his lovely home and park.

### Climb Cutting: Minimizing the danger

Always use the best personal safety gear, sharp router bits and your full concentration when making a climb cut. If you are uncomfortable with the prospect of making a climb cut, don't do it. There are alternatives.

Some will dispute my assessment of the dangers involved in making a climb cut, and they are free to do so in their own shops, with their own fingers. Do not approach this technique lightly and urge you to seriously consider the other possibilities as well.

Router bits are designed to cut against their rotation. Whether moving a hand-held router along a piece of wood or pushing wood into the bit of a router mounted in a table, working against the rotation of the bit provides resistance that gives you control over the wood. The same holds for shapers as Jim learned.

A climb cut is when you reverse the feed direction, moving the wood in the same direction as the cutting edges are turning. The bit rotation no longer resists the movement of the wood but tries to accelerate it in the same direction you are moving. If done incorrectly, the cutting edges of the bit can grab the material and eject it with tremendous force and speed.

While damage to the wood is likely, that is the least of your worries. When the wood is ejected, it essentially disappears, leaving your hands dangerously close to a spinning bit capable of causing devastating damage almost instantly. Compounding this danger is that the force you had been applying to control the wood can cause your hands to lurch towards the bit when the wood is ejected.

If adequate protection in the form of quality push pads or similar devices are not used, your hand can easily contact the cutter. In situations like this, there are few small injuries.

The shape of the router bit has a lot to do with the decision to make a climb cut or not. Do not consider a climb cut using anything but a flush-trim or other straight-sided bit equipped with a bearing that limits the depth of cut to 1/16" or less.

Many straight bits have slanted or spiral blades designed to produce more of a slicing motion, reducing their tendency to chip and tear the wood. While they are effective, they do not eliminate the chances of a kick out during a climb cut and demand the same level of caution.

Bits with any kind of shaped cutter are not candidates for climb cuts in any shop. Very often, cutters with curved or shaped cutting edges can be used against the grain, taking a series of very light cuts, without chipping and tearout problems. Those same edges in a climb cut mode will almost

certainly bite into the wood and eject it. Obviously, the best way to eliminate the danger of a climb cut is to avoid it in the first place. In many cases, there are alternatives.

When routing symmetrical patterns, very often the down-grain side can be routed, the piece turned over, the template re-installed and the remaining portion routed, also in the down-grain mode.

In cases when repositioning of the pattern is not possible, route the down-grain side and then move to your drum sander (a spindle sander also works well) to finish shaping the piece. It takes longer, and requires considerable care to avoid damaging the piece.

Using a band saw or jigsaw, remove material as close to the layout line as you can and still leave just enough for the trim bit to clean up the surface.

In cases when repositioning of the pattern is not possible, you need to have routed the down-grain side and then moved to a drum sander (a spindle sander also works well) to finish shaping the piece. Again, it takes longer, but the end result can be just as good as with the router, and much safer.

To make a climb cut with any degree of safety, it is crucial to eliminate as much of the waste material as possible before going to the router table. The amount of material being cut has a direct relation to how difficult it is going to be to control the wood during a climb cut.

Those who are practiced with a hand-held jigsaw or a band saw can use those machines to remove waste very close to the layout line. Ideally, there should be a maximum of 1/16" of wood to be removed with the router bit.

If you are not comfortable cutting that close or if your machine is not quite accurate enough to do this reliably, cut as close as you can and then use a drum or spindle sander to reduce the remaining material outside the layout line to 1/16" or less. Because the router will clean up the edge, aggressive-grit paper can be used to help speed this portion of the operation. A drum sander works very well for bringing an edge close to the template.

The most important part of this procedure is to be sure the edge created during trimming is square. There has to be enough material for the router bit to clean up the whole edge - no more, no less. For this reason, you should be doing the final material removal with your drum sander in the drill press, with the table adjusted to exactly 90-degrees to the drum. Some jigsaws (and jigsaw blades) can cut at an angle when you least expect it. If that angle runs towards the layout line, it can remove material beyond the path of the router bit and ruin the edge.

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Climb Cut continues

There are many different devices meant for use on the router table to control wood and keep fingers safe. The best are the rubber-bottomed push pads with elevated handles more commonly used on the jointer. To me, these pads get a better grip on the wood than I can with other devices, including my fingers.

Push pads like these give a better grip on the wood and with the tall, offset handle, keep your hands away from the cutter. They aren't perfect, but far better than using your fingers.

An important feature of these push pads is the distance and material they put between your fingers and the cutter. If things suddenly go wrong, you would much rather tear up your push pads than your fingers.

Smaller pieces are most dangerous to climb cut because they are more difficult to control. Very often, the profile that needs routing can be done on a larger piece of wood, and then the final piece cut from the board. Consider doing this even for normal routing procedures to increase their safety.

Following the bit manufacturers recommendations on bit speed is always necessary for safety and performance. When it comes to climb cutting, speed can be especially important.

Running a bit too slowly reduces its cutting effectiveness and can make it "grab" more easily. Turning a bit at excessively high speeds can cause the bit to vibrate, increasing the chances of it "grabbing" and starting a loss of control. This vibration may not originate solely from the bit but rather be a combination of the bit, play in the router and in the mounting to the router table itself. Individually the amounts to runout or play may be within specification, but when combined, a serious vibration can result.

Long bits, especially those with cutter lengths in excess of two inches, are more prone to vibrate at higher speed settings. While this is probably due to the same combination of factors, it can occur at speeds within the manufacturers range of recommended settings.

To identify this vibration, start the bit at the lower end of the recommended speed range and then slowly increase the speed. As the higher speed limits of the bit are approached, you can hear and feel a small vibration begin. Slow the speed setting until the bit "smooths out" and use that speed for routing.

If you have to slow the bit below the manufacturers recommended settings, there could be a problem with the bit itself, the router or how the router is mounted in the table. Investigate those problems and make repairs as needed before trying to make a climb cut!

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Reducing the amount of wood to be cut helps limit the cutting forces generated during a climb cut. However, maintaining a solid grip on the wood remains crucial. Using a good pair of rubber-bottomed push pads not only keeps your hands away from the cutter, they give you a better grip on the wood.

Make sure that no one is standing where the wood may go if you lose control. It is also wise to turn your router table so that there are no windows or other breakable objects in the possible "launch" area. If the wood is ejected, it usually does so with considerable force.

With the router bit properly adjusted so the bearing is squarely on the template, start the router and let it come up to full speed. Place the push pads on the material so the rubber pads have the maximum contact with the wood or template if it is on top. Remember that little pressure is needed to keep the wood in contact with the bit but considerable force will be necessary on the push blocks to maintain control of the wood.

Slowly move the wood to the bit, letting the bit cut the wood away rather than forcing the wood into it. Once the bearing is against the template, slowly move the wood left-to-right along the bit, again letting the bit cut its way through the wood. If you try to go any faster, the bit will take a bite and loss of control is almost certain.

Some like to make climb cuts in small sections rather than one long cut. Often short cuts let you keep the push pads in the optimum position. Never try moving the push pads on the material during a cut! If you feel uncertain at any time during a cut, pull the wood away from the bit and reposition your push pads or the wood so you feel more comfortable.

Be careful when nearing the end of the board or the end of the area you are cutting. If there is an edge at the end of the cut or a change in grain direction, it is safest to stop routing just short of that point and finish it with hand tools. If you make climb cuts long enough, a failure during that procedure is all but certain. Hidden weaknesses in the wood itself can cause it to split even when the climb cut is done correctly. It is also very easy to have a momentary loss of concentration, allowing the bit to grab and eject the workpiece. Making a climb cut is not an operation to try if you are tired or otherwise distracted.

Climb cuts can be accomplished with relative safety if the piece is prepared correctly, the bit is very sharp and good push pads are used. However, there is always some level of risk. You can minimize this risk by being aware of it and taking necessary precautions before making the cut. *Barry Humphus based on an article from newwoodworker.com*