

Tips for square glue-ups

BY STEVE LATTA

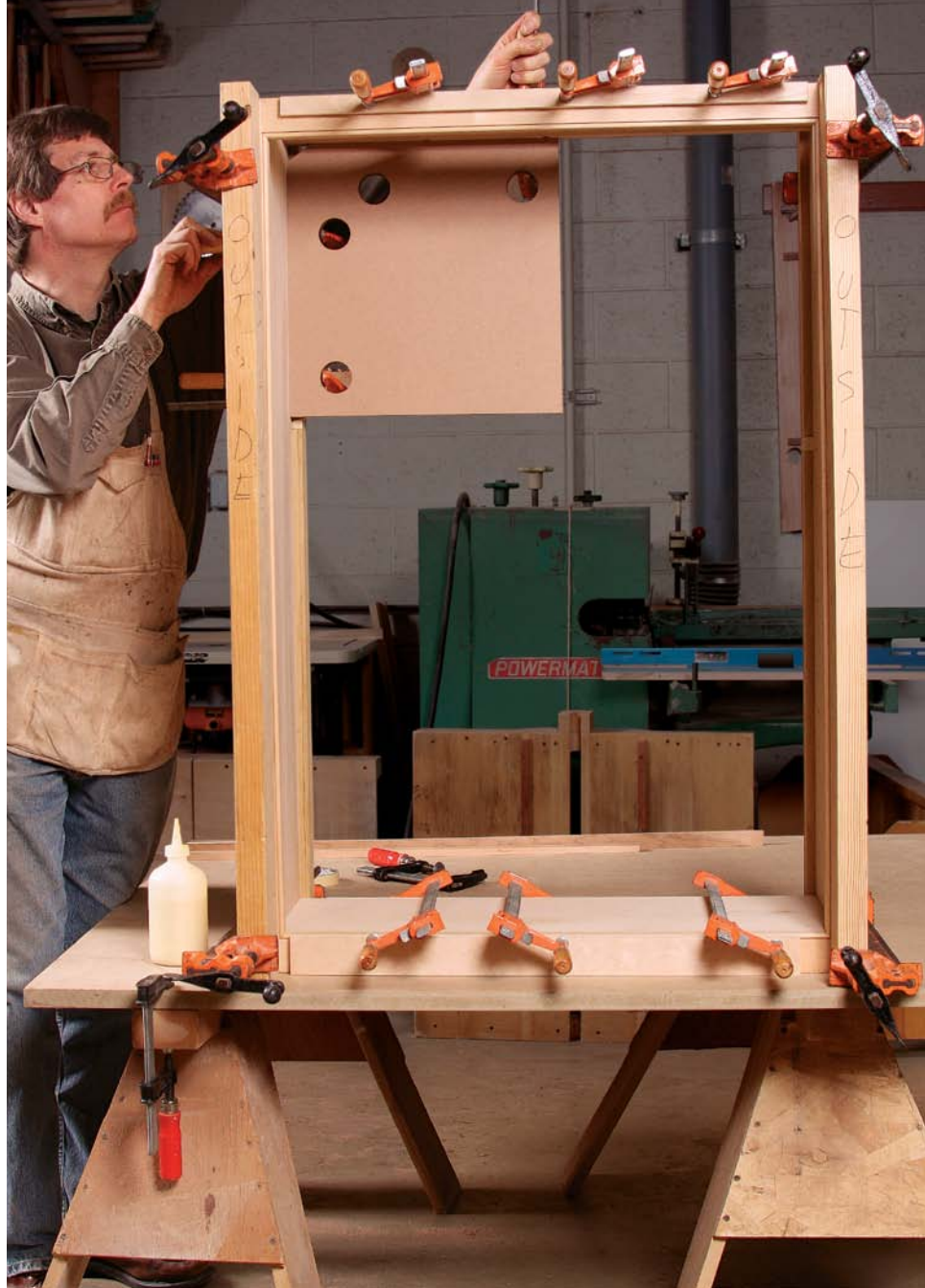
The absolute worst time to try to solve a problem is when the glue is starting to tack. I watch my students scurry like mice in a maze, tracking down extra clamps to pull together a joint that just won't budge. In desperation, out comes the claw hammer and then things really start a downward slide.

Frantic glue-ups create open joints and out-of-square assemblies, which in turn means that doors and drawers don't fit. Sad to say, these wounds are usually self-inflicted. However, if you follow a few basic steps before and during the glue-up, you can approach this stressful time calmly and confidently.

Laying the foundation

First and foremost, gluing up a project needs to be viewed as the end of a process, not an isolated event. Proper alignment doesn't just magically happen, but rather is the outcome of a well-executed plan.

Let's start with design. For example, if I'm building a free-standing, open-front bookcase with fixed



Get a good start

You can't get square glue-ups if the components don't match and the assembly surface is twisted.



A FLAT SURFACE

Use a 4-ft. level to see if your bench or outfeed table (above) is flat. If it isn't, clamp a piece of 3/4-in.-thick MDF or plywood to a pair of sawhorses and use shims to bring that surface flat (right).

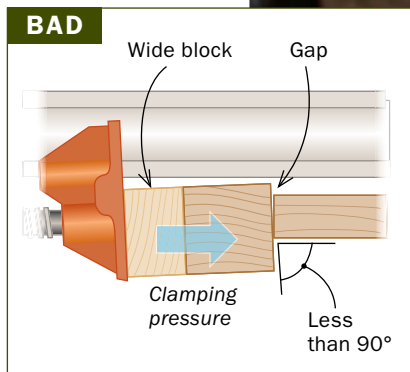


EQUAL PARTS

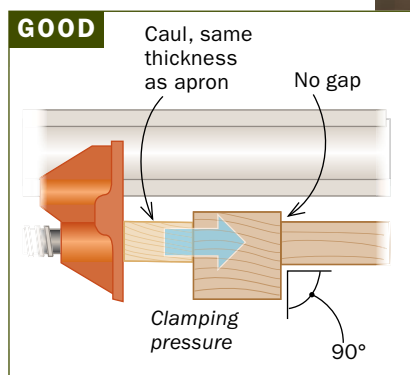
Parts on opposite sides of a piece must be the same length between shoulders to ensure square corners.

Make the right clamping block

Direct the pressure where you need it



Too wide. Using a wide caul directs the force of the clamp to the front of this leg, twisting it out of parallel with the rear apron.



Direct the force. A clamping block the same thickness as the apron and placed in line with it (left) keeps the leg straight (above). Tape the cauls in place to leave your hands free for clamping.

shelves, I'd feel comfortable using slats for the back. The glued shelves make up for the slats' lack of rigidity. However, if inset doors are part of the design, and if the shelves are adjustable, I'd go with a frame-and-panel back, especially one with glued-in panels. It will help make the main box square, which makes fitting the doors much easier. It also will keep it rigid, preventing the doors from binding.

You can't perform the impossible

It sounds obvious, but the piece you're gluing up should have the potential to be square! For example, if making a small table with a single drawer opening, the shoulder-to-shoulder distance on the rear apron better match the shoulder-to-shoulder distance on the drawer rails in the front. If not, the table will be a trapezoid and the joints may show gaps. Likewise, the shoulder-to-shoulder distance of the upper and lower drawer rails better be the same or the opening, no matter how much tweaking is involved, won't be square.

Have good-fitting joints and use the right cauls

Joints that fit properly need minimal clamping pressure. If an assembly can only come square by overtightening the clamps, the object will not remain square when the clamps come off but will eventually creep back into distortion.

You should prepare properly sized clamping blocks and cauls to direct the pressure accurately. Grabbing random-size blocks misdirects the pressure and just doesn't get the job done. For larger cases, corner braces with clamp holes along the edge ensure 90° corners.

Tools to check for squareness

A combination square is useful for checking to see if corners are 90°. For larger pieces, plastic 30°-60°-90° corner drafting triangles come in a variety of sizes. However, even if a corner is 90°, the piece as a whole can be out of square. Measuring the diagonal distances is a foolproof way to check. A tape measure works great for exterior corner-to-corner dimensions. However, if clamps are obscuring the exterior corners, you can measure the interior diagonals using two sliding sticks with ends cut to a point.

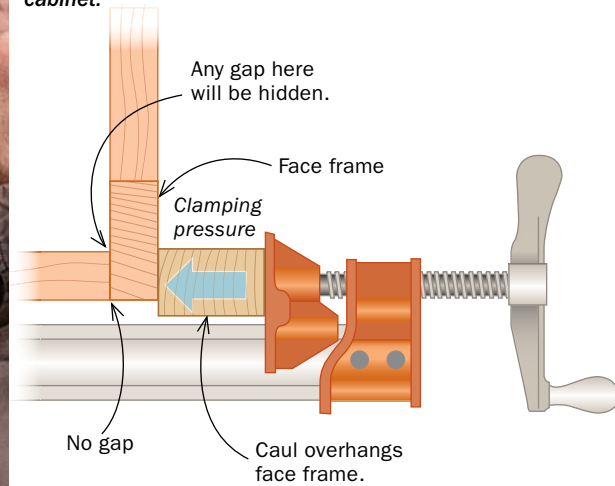
Practice makes perfect

The number one rule that should never, ever be ignored: Always do a complete



Direct the pressure cont'd.

Gap-free face frame. The visible outside of the face frame must join seamlessly with the carcass; the hidden inner side of the joint is less critical. To direct the clamping force to the outside, place the caul so that it overhangs the exterior of the cabinet.



Spread the pressure where clamps can't reach



Two clamps, two cauls, two hands. Put a convex curve on the face of a caul to get even pressure across a wide joint. Elevating the caul on a block of wood brings it even with the joint, leaving your hands free to work the clamps.

dry-fit with all clamps, blocks, and corner supports. If you can't get the piece square during a dry-fit, you'll never get it square with the actual glue.

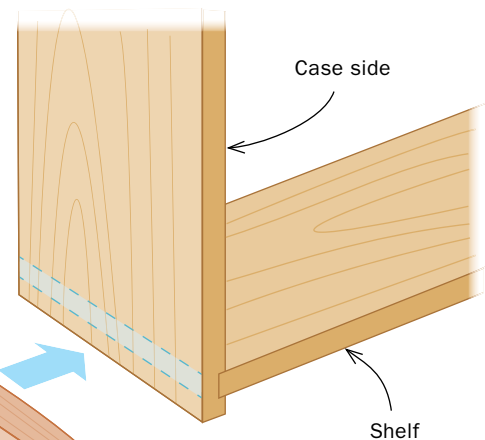
After a bad rehearsal, actors may comment, "It'll be all right on the night," but for woodworkers, all the lines must be perfect before the glue is applied.

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A CLEVER CAUL

Face of caul is convex to apply pressure across the whole joint as clamp force is applied at both ends.

Block taped or glued to caul elevates it even with the joint.



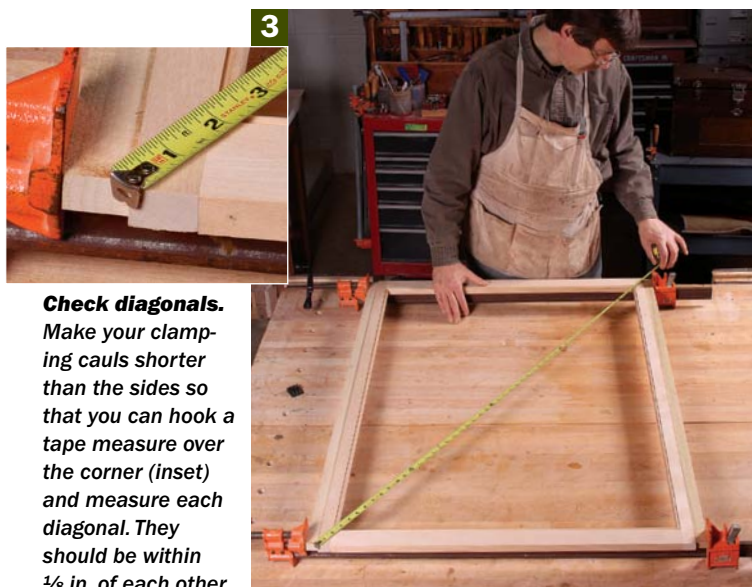
Four ways to check for square



1
Combo square. A combination square is a great tool to check that corners are square in small openings.



2
Flexible choice. A raised panel may interfere with a rigid square but a plastic triangle can be bent downward to contact the frame.



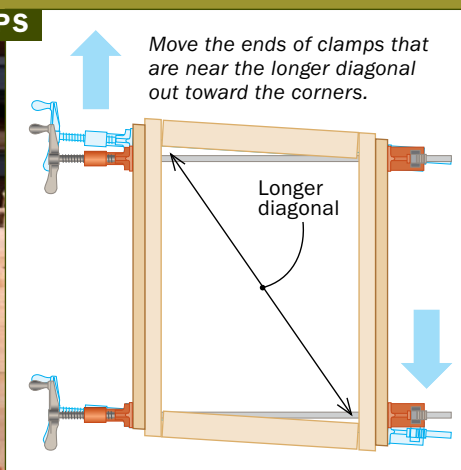
3
Check diagonals. Make your clamping cauls shorter than the sides so that you can hook a tape measure over the corner (inset) and measure each diagonal. They should be within $\frac{1}{8}$ in. of each other.



4
Check inside. If clamps are blocking the outside corners, you can check the interior diagonals using two sliding sticks with pointed ends (inset). Measure the first diagonal and draw a line across both sticks. Then measure the opposite diagonal.

Two ways to adjust

REALIGN THE CLAMPS



Angle the clamps. If the diagonals are different lengths, shift the clamps to pull the frame into alignment.

OR ADD CORNER BRACES



Attack a corner. Clamping a square brace into one of the corners can bring an entire assembly back to square.