When Clamps Fall Short

Standard clamps are blunt instruments. For precise glue-ups, they need help

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ne of woodworking's most shared—and truest—pieces of advice is that you can never have too many clamps. What's also true (but said less often) is that for many glue-ups, clamps alone aren't enough. Sometimes they apply pressure too broadly or don't reach deeply enough. Standard clamps also have trouble with curved work. The results can range from crooked glue-ups to insufficient pressure and weak joints.

The good news is that you don't need an arsenal of specialized clamps or storebought helpers. Most of the time, a little shop ingenuity does the trick. Here are some techniques I've developed over the years and turn to again and again.

Clamp pads and support blocks keep glue-ups square

A woodworking clamp will squeeze whatever you put in it, but it can't line itself up properly or, for that matter, apply pressure in a very precise way. This is why a clamp pad should be more than just a random piece of scrap that keeps the clamp from marring your work. It should be carefully dimensioned to center pressure on the joinery. Improperly sized clamp pads in a leg-to-apron assembly, for instance, might cause the legs to rack.

Consider a cabinet door with a copeand-stick frame. The short tenons allow the assembly to twist under pressure. If the clamp pad is thicker than the frame stock, it will transmit pressure at the top edge of the stile, causing it to flex upward and out of square. But a clamp pad of proper size—about ½ in. thinner than the door stock, and an inch or so wide—focuses the clamp pressure and keeps the stile in line with the rail. The resulting joint is flat and tight on both faces.

This approach also applies to face frames for cabinets. For sides, doors, and drawers to fit properly, the face frame needs more than tight joints; it needs stiles and rails resting in the same plane.

Support blocks—I use a pair of "bench horses" to elevate my work above the bench when I'm gluing up (see photo, facing page). That way, I can easily run clamps underneath it.

It also can be quite difficult to locate a clamp over the work, aligning each end of the clamp correctly, while keeping the bar level *and* tightening the clamp at the same time. A support block underneath



Compare diagonal measurements. Any difference signals an out-of-square case. Correct it by realigning clamps as shown in the drawing at right.



A simple clamping form squares up corners. When clamps won't bring the case into square, a square piece of MDF can help bring one corner into square. This typically will bring the entire case into alignment.

STAY SQUARE

Ensuring that a case or frame comes together squarely involves more than simply putting the glue-up in clamps and tightening. It requires careful clamp alignment and sometimes extra help.



Solution: Shift the clamps in the direction of the longer diagonal.

Clamping form is another option

Fashion a clamping form out of a square piece of MDF. Drill a series of holes large enough to accommodate a clamp head, so that the form can be held firmly to an interior corner of the glue-up.

Cut holes large enough for the clamp heads.

90°

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FOCUS PRESSURE WITH PADS

Clamp pads should be part of every glue-up, but they do more than just protect the work. A properly sized and located pad or support block will direct the clamp pressure and help achieve a tight, square glue-up.







CUT THE PADS TO FIT THE WORK

The pads built into most clamps are too large for many jobs and will distort an assembly like this door frame (above left). Shopmade cauls or pads, properly sized, will keep the pressure in line (left). Cut the pads about $\frac{3}{6}$ in. shorter than full length; the space at each end lets you hook on a measuring tape to check corner-to-corner dimensions.



TAPE THEM IN PLACE This simplifies the task of getting the clamp and pads where you need them. These pads are cut long to distribute even pressure to both rails.

A SUPPORT BLOCK IS A THIRD HAND

A spacer block keeps the clamp parallel to the work (above right) while you tighten it. The block should be dimensioned to precisely locate the clamp pads (right).





the clamp helps. I make sure the block is dimensioned so that when the clamp is resting on it, the clamp head and threaded end fall exactly where they should. This block also acts as a fulcrum as you adjust the clamp to be parallel to the work.

I use a support block when I glue up the front assembly for a Sheraton table, for example. The drawer opening is shallow enough that I can use a single clamp, mounted from the top, to hold all of the joinery fast while the glue dries. I dimension the block so that the clamp head falls midway between the upper and lower rails. On a smaller scale, the same technique works nicely when gluing cock beading on a drawer face.

Square clamping forms—Here's a simple helper for regular clamps when casework doesn't cooperate. Start with a rectangle of ¾-in.-thick medium-density fiberboard (MDF), check the corners for square, and

drill a series of 1¹/2-in.-dia. holes along the edge. The corner of the MDF goes into the corner of the case, and clamps are hooked into the holes and snugged to the sides, holding the case square. The size depends upon the nature of your work. For larger projects like wardrobes or armoires, the clamping form may be 24 in. square.

Build a bridge to extend a clamp's reach—When you need to apply downward pressure in the middle of a wide panel (to align boards, for instance, or to repair a bubble in veneer), start by placing a clamp pad over the work and another at the panel's edge. Use a stick of hardwood as a bridge between the two blocks and fasten your clamp in the middle of the bridge to apply downward pressure. You can get a similar effect by spanning the entire panel with a bar clamp and using a pair of opposing wedges underneath the bar to apply the downward pressure.

Even pressure on odd shapes

Sometimes a standard clamp won't work on its own because the work is curved or angled in a way that prevents the clamp from seating properly. In these cases, use a caul or clamp pad that conforms to the shape of the work while offering the clamp a flat surface. One of my favorite ways of doing this is by using the very offcuts

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REACH FARTHER

Sometimes the size or shape of a workpiece means that clamps need help to deliver pressure where it's needed. Modified clamping pads help distribute pressure or give the clamp a place to grip.

CURVED CAUL SPREADS PRESSURE

As the two clamps are tightened, this caul applies pressure evenly between them. This ensures that the shelf will bottom out in its dado. A block elevates the caul so that it aligns perfectly with the joinery. The apex of the caul's curve is about ½6 in. proud of the two clamping points.



Clamp at the ends, around the front and back of the case.





BRIDGE REACHES FAR-AWAY SPOTS

With two pads and a length of ¾-in. stock, it's possible to use a standard clamp to apply pressure in the middle of a wide panel, to glue in an inlay, for example. "Bench horses" elevate the work and make clamping easier.

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FLEXIBLE STRAP GRABS A BIG CURVE

Gluing the rear rail into this demilune table would be a challenge with standard clamps alone. The curved aprons offer no secure clamping surface. Latta glued a pair of blocks to a length of veneer so he could use standard clamps.

IRREGULAR SURFACE? **USE THE OFFCUT**

Standard clamps can't get a solid grip on shapes that aren't rectilinear. Offcuts from these workpieces can serve as perfectfitting clamp pads.

SIMPLE CURVES

The bandsawn cutoff for a curved table apron makes an ideal clamp pad for gluing a bead along the apron's bottom edge. A narrow strip of foam padding helps even out the pressure.





created when I bandsawed or scrollsawed the profile. It pays to label and save your offcuts. I do this, for instance, when I cut out the bracket feet for a spice box. When it's time to glue down the feet, I put the offcuts back in place and use them for clamp pads. Again, they mate perfectly with the irregular surface while giving the clamp a secure attachment point. In a similar way, when I bandsaw out the top of a small bow-front table, I keep the radiused offcut and use it as a clamp pad for gluing a strip of veneer along the edge.

A crown molding with an ogee or other complex curved profile is another prime example. The flat surfaces on the molding are

too narrow to support a clamp. An offcut of the same molding, turned upside down, could make a perfect clamp pad. Place it so that its profile mates with the molding to distribute clamp pressure evenly.

Clamping without clamps—To clamp the upper and lower scrollwork of their Chippendale mirrors, my students use plain old rubber bands. Adjusting the bands to apply a little more tension in the front or back will correct any lean. The bands apply plenty of pressure for a joint that will be reinforced by a ridge of glue blocks.

Clear packing tape makes another excellent clamp. My students use it to glue up the base for a mahogany bookcase that we



INVERT THE PATTERN An inverted offcut helps secure the crown molding on a Pennsylvania spice box. The reversed molding hits its mate at the critical upper and lower edges for even pressure.

build in class-essentially a frame joined with flat miters in front and butt joints in the rear. All the joints are reinforced with floating tenons. Because the edges on the front and side pieces are already profiled, using bar clamps is out of the question. Not only would the clamps mar the detail, but the profiling also would cause the pieces to rack as the clamps are tightened.

With the front miters, a single piece of tape is carefully wrapped and stretched, starting on the back face, across the front and perpendicular to the miter, and around to the back. It's important to avoid wrinkling so the frame will press flat.

Once the miters are taped on one side, the students flip the frame and repeat the process. This doubling of tape balances the pressure and holds the joints tight. For the rear butts, a single piece of tape is pulled down from the outside and stretched onto the rear rail. We run about a foot of tape onto that rear rail, top and bottom. Then

COMPLEX PROFILES The scrollsawn offcut

for a bracket foot is

ideal for applying pressure evenly. A piece of plywood gives the clamp a flat surface underneath instead of a profiled edge.

FLEXIBLE SOLUTIONS

When an offcut won't work, sometimes common items like packing tape or rubber bands can hold odd shapes securely.





WRAP IT UP

Inexpensive, lightweight packing tape has a little stretch, letting you pull together a joint like the miters on this cabinet base (top). The taped-together joint is secured with a clamp between cauls to keep the assembly flat (above).

we place the frame on a flat surface that allows access to the corners, and clamp a 6-in.-square piece of MDF on top of the miters to make sure they dry flat.

The miters on flat or ogee bracket feet are easily glued with tape acting as a hinge. After cutting the miters, lay the pieces flat with their top edges referencing against a straightedge. Push the miters tightly together and lay a strip of tape along the joint. Apply a thin film of glue and let it soak into the end grain for a minute or two. Apply more glue and hinge the joint closed slowly, allowing the excess adhesive to squeeze out the back. A small strip of tape from corner to corner will hold the joint tight while the glue sets. This method applies pressure where it is needed in a much more controlled manner than clamps. Also, it doesn't mar the surface.

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CLOSE A MITER

A straightedge keeps this mitered bracket foot aligned as a packing-tape hinge is applied to the outside of the joint (above). The tape keeps the corner together as the miter is closed. After gluing and folding the miter together. wind more tape around the assembly several times to securely clamp the joint (left).



For light clamping of irregular parts, like the scrollwork on this Chippendale mirror, rubber bands apply pressure where other methods can't reach.

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