For many beginning woodworkers, one of the most intimidating aspects of solid wood furniture construction is gluing up wide flat panels for tabletops. That’s because, unlike other jobs, slow and steady won’t win this race. Once you spread the glue, you have less than 10 minutes to pull everything together.

Professional woodworkers like Jim Probst (see “The Much-Heralded Mortise And Tenon,” page 38) rely on a step-by-step routine to ensure that glue-ups go glitch-free. Whether you choose to adopt Jim’s regimen, or adapt his techniques with your own, your glue-ups are guaranteed to go faster and easier.

Jim Probst’s Four-Step Process for Seamless Panels

Conquer one of the challenges of wide flat panel construction with a proven routine that makes glue-up glitch-free and a lot faster.
Step 1: Go for Good Looks

Too often, woodworkers get so involved with the mechanics of a glue-up that they forget about the most important end result—aesthetics. Few things look worse than poor grain matches, so take your time. If you have the luxury, it’s best to buy your boards from the same log, long enough to get at least two top pieces from each, and get about 30 percent extra for waste. Here are some other tips to help you work with whatever stock you have on hand.

This is where Jim suggests that you take your time. If your boards are rough-cut and you can’t make out the grain patterns, skim the surfaces on your jointer or with a hand plane. If you can afford to lose some width, rip off any sapwood or other blemishes. Sometimes you can “hide” sapwood by putting it on the underside of your top. Lay the boards edge to edge and then slide each board back and forth, or rearrange the order, until the grain patterns blend as harmoniously as possible (right). Once the boards are arranged to your liking, cut the boards to rough length—about 2” longer than needed. The extra length gives Jim freedom to slide the boards slightly during glue-up. (He trims the panel to final length after assembly.) Surface and thickness-plane your boards about 1/16” thicker than the finished dimension.

You’re ready to joint the edges and test-fit your top. Rather than shooting for a dead-straight edge, Jim planes a tiny dip in the center of each board. (When the boards are placed edge to edge, a hint of light should peek from the middle of the joint.) This “sprung joint” helps compensate for future moisture loss at the outer edges of the panel. If there are gaps at the outer edges of the joints, it’s almost guaranteed that they will eventually open up regardless of the strength of your glue.

After jointing all the mating edges, lay your boards out again and recheck your pattern. Once you’re satisfied with the look, mark a V across the faces with a pencil or chalk to correctly reposition them later. Leave an extra ¼” or so of wood on the outermost edges to protect the panel from clamp dents and other dings. Trim the panel to final width after assembly.

TIP ALERT

USE FINGER PRESSURE, or a light tap from a dead-blow hammer, to align the edges of the boards. A C-clamp can help flush up joints at the outmost ends of the panel (inset).

BALANCE THE CLAMPING PRESSURE on both sides of the panel. When the clamps are equally tight, you should see an even bead of squeeze-out along the joint line.

www.WoodcraftMagazine.com

www.WoodcraftMagazine.com 39
Step 2: Get Ready to Glue

Now’s the time to gather your clamps and other supplies. There’s nothing worse than being in the middle of a glue-up and having to search for something you forgot.

First you need a flat surface to work on. If this is your workbench, you may want to cover it with cardboard or Kraft paper.

Now pull out your clamps. You’ll need at least five clamps for a 4’- to 5’-long top. You should have a couple extra clamps at the ready to help flatten your panel if necessary. You should also use clamp pads to spread out the pressure and prevent the clamps from marring your work. Jim made some nifty clamp pads from scrap plywood about 4 x 4” with a 1¼” hole in the center that stay on his clamps. Additionally, you’ll also want to have a few C-clamps, a straight edge, and a dead-blow hammer.

Don’t forget the glue. Jim uses regular yellow glue for all of his panel glue-ups and a disposable plastic knife for a spreader.

You’re almost ready to glue. Prearrange the first three clamps on your bench. Center one clamp in the middle of your assembly bench and position the other two about 6” in from the ends of your boards. Take a minute to adjust the clamping heads so that you’ll only need to tighten them once you’ve applied the glue. To prevent the black stains that occur when metal clamps come in contact with glue and wood, you might want to run a strip of masking tape down the length of your clamps.

TIP ALERT

Jim’s dedicated glue-up table is surfaced with a melamine-faced top so cleanup is a breeze.

TIP ALERT

Regular yellow glue has a five-minute open time. Titebond Extend (Woodcraft #140441, $5.99) has a 15-minute open time that can come in handy when tackling complex glue-ups.

Panel-Making Myths

Occasionally, a myth is repeated so many times that it becomes accepted as fact. Here are some common myths about glue-ups.

- Myth 1: Alternating the growth rings on flat-sawn stock is the best way to minimize cupping.
  
  Fact: Matching for looks is more important. (In fact some cabinetmakers prefer orienting boards so that the center of the tree faces up because the “inside face” has a richer appearance.) As long as the top is properly attached to a base, movement isn’t an issue.

- Myth 2: For a really strong edge joint, you need to use dowels or biscuits.
  
  Fact: Dowels and biscuits can cause more problems than they solve. Dowels do not expand and contract along with the rest of a top and can actually force a good joint apart. Biscuits swell enough to make raised areas along a glue line. Also, if a panel is sanded too soon after glue-up, when the moisture from the glue in the biscuit pocket finally evaporates, you may end up with depressions on the surface where each biscuit is located. Realize that with a good joint and fresh glue, a simple edge joint is stronger than the surrounding wood. The only time you might consider using biscuits is if your boards are slightly bowed. In these situations, the biscuits need not be glued and only serve as alignment aids.

- Myth 3: Too much clamping pressure will “starve” a glue joint.
  
  Fact: There is some truth to this but the fact is, most woodworking clamps are not capable of exerting too much clamping pressure. Bar clamps and pipe clamps apply the most pressure of commonly available clamps. If you snug them up firmly, you should be just fine. More important is to use enough clamps for the job. Clamping force radiates out 45˚ from the clamp head, so you want to space the clamps in such a way that you end up with even pressure along the entire glue joint.
Step 3: Glue and Clamp

Once glue is applied you have about 5-10 minutes to accomplish your task, and there’s no turning back. The best way to prevent panic is with preparation. Do a dry run. A no-glue clamp up is the best way to check for any glitches you might encounter. Don’t apply heavy clamp pressure on a dry run because it can crush wood fibers and prevent full glue penetration when you do the actual glue-up.

Stand your boards on edge and apply a bead of glue on each mating surface, then spread the bead out evenly. The amount of glue you use is a judgment call. You want enough glue to get a nice even squeeze-out. If there is no ooze, you haven’t applied enough. If glue is dripping everywhere, you’ve applied too much.

Next, pull everything together. Lay your boards down and match up your pencil lines. Tighten the center clamp until the glue begins to ooze; then lightly tighten the end clamps. Now, starting at the center of your panel, align each joint as closely as possible (Photo A). Sometimes the joints need some persuasion from a dead-blow hammer to fall in line. If necessary, loosen a clamp or two to make this easier (Photo B).

The problem with the bottom-clamp only arrangement is that the panel is likely to bow. To counteract this pressure, you want to add clamping pressure along the top of the panel as shown in Photo C. Using your straightedge, check the flatness of the panel as you go. Sometimes, you may need to use extra clamps to pull the assembly flat (Photo D). Once all is as it should be, tighten each clamp and then do one final flatness check before you take a break and let the glue dry.

After a couple of hours when the glue reaches a gel-like state, Jim removes the clamps and begins the cleanup. First, he uses a hook-type scraper, as shown in Photo E, which will do a fine job of removing the partially cured glue. If you encounter tear-out, try scraping from the opposite direction. When he’s done, Jim wipes the surface with mineral spirits to highlight any missed spots.

After scraping off the glue, give the panel at least 24 hours to dry. Considering that the glue dries in 4-6 hours, this might seem excessive, but the extra time allows the wood alongside the joint to release the moisture it absorbed from the glue. If you smooth the panel too soon, the wood around the glue line will dry and shrink, resulting in a visible dip.

Once the panel is dry, Jim knocks down any out-of-level joints. To do this, he uses a #4 bench plane, as shown in Photo F, to smooth out the entire panel. Since a little tear-out is inevitable, he finishes up with a card scraper.

You’re almost done. To avoid the risk of rounded-over edges, Jim sands both sides of the panel up to 180 grit. Once sanded, he trims to the panel to final dimensions. A final hand sanding with 220 grit is all that’s needed before applying your stain or finish.

If you apply glue to an edge and are interrupted or decide not to continue, it’s not enough to just remove the uncured glue with water. When the board is dry you’ll need to re-joint the edge to expose a fresh surface in order to achieve a strong bond.
FREE YEAR!

2 YEARS for $29.99!

go to woodcraftmagazine.com and click SUBSCRIBE

-or-

Complete the form below and mail in an envelope addressed to:

WOODCRAFT MAGAZINE
PO BOX 7020
PARKERSBURG WV 26102-9916

□ Payment Enclosed    □ Bill Me
Name
Address
City
State        Zip
Country
E-mail

Send in now to get 2 Years for $29.99!

or go to woodcraftmagazine.com and click SUBSCRIBE

By providing my e-mail address, I am indicating I’d like to receive information about my subscription and other offers from Woodcraft Magazine via e-mail.

Outside of the U.S and Canada add $30 for postage.
Foreign orders must be prepaid. Payment in U.S. Funds only.