## Assembly Photos

If you plan to refurbish a major shop tool or other equipment, take some photos before you start. They possibly can save you some head-scratching during the reassembly process. Take pictures from a number of angles, and take close-ups of areas where you think you might have some questions later. The more complex the machine, the more photos you should take.

## Blade Check

If your gluing work is less than successful, check your blades. If the blade in your saw is getting dull, it can loosen (but not remove) a layer of fibers on the edges to be joined. Later, glue may not be able to penetrate through this debris to solid wood, resulting in weak joints. A signal that this may be the problem is if ruptured joints are coated with fibers

## Clamp Helper

When clamping long or wide panels with bar clamps, a dowel inserted crosswise between the jaws of the bar clamps and the wood will help center the pressure and keep it uniform. Use dowels about as thick as the thickness of the wood you are gluing up.

## Clamp Secret

Before you glue up wood for a project, examine the parts. If at all possible, start out with cleanly cut, perfectly straight boards of the proper thickness. Take out any bow or warp before you begin your gluing work. By using straight and true stock, you won't have to force the boards in one direction or another, and you won't have to get into tricky, complicated clamping set-ups.

## Dowel Sizes

When using dowels, select a size half the thickness of the wood being joined. For example, for 3/4-in. stock, consider 3/8-in. dowels.; for 7/8-in. stock use 7/16-in. dowels. The length inserted should generally be three times its thickness. Thus, a 3/8-in. dowel should be about 2-1/2 in. long to penetrate into each member 1-1/4 in.

## Drill Signal

When drilling a hole, such as for hardware in a cabinet, use a back-up board of a wood that is different in color from the wood you are drilling through. By doing this you will know immediately when the drill is all the way through the cabinet wood because the wood chips coming out will turn a different color.

## Driving Nails

As with screws, a little paraffin or beeswax will make driving certain nails, especially casing nails, much easier. If you are driving a cement-coated nail, always keep it going all the way once you start. Friction heats up the nail's coating and if you stop midway it cools down and tries to glue the nail in place

## Fixing loose screws

If a screw turns, but won't tighten, enlarge the hole with a drill. Fill it with glue and a dowel that matches the size of the hole. After the glue dries, cut the dowel flush then drill a pilot hole for the screw.

## Glue Containers

Getting black glue lines on projects? Metal containers like coffee cans can cause this problem, which occurs more often with white glue than with yellow glue. Glues with a pH lower than 7 can absorb iron from the metal, and the dissolved iron can react with certain colored woods to leave black glue lines. Use plastic containers instead.

## Glue Removal

Glue squeeze-out can be wiped up with a wet rag, but this can drive some of the glue into the wood's pores. A method preferred by many pros is to allow the squeeze-out to form a thick skin (usually about 15 minutes), then use a sharp chisel, paint scraper, or cabinet scraper to remove it. A 1/2- or 3/4-in. chisel is handy for glue removal inside corners or next to mouldings.

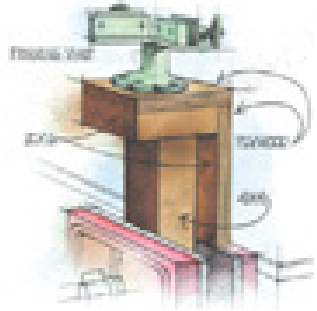
## Joint Sizing

Glue will soak more into the end grain of wood and can potentially result in starved glue joints. To help prevent this, you can "size" any end grain to be glued with a mixture of glue diluted with water. Dilute just so that when it is applied, glue drops don't form at the lower edges of the wood. Another method, somewhat less effective, is to coat the end grain with full-strength glue, allow it to dry 5 to 10 minutes, then re-coat with glue and assemble.

## Pilot Hole

Drilling a starter, or pilot hole keeps wood from splitting and makes the screw easier to drive. Use a bit that is slightly smaller than the screw.

## Portable Framing



A picture-framing vise, or miter clamp, has screw holes on the bottom for attaching to a workbench. But for occasional framing it can get in the way of other benchwork. A solution is to mount it on a wooden base that can be readily clamped and unclamped in your bench vise. The base can be of scrap wood, and made up so that the framing vise will be about chest high for comfortable working.

## Screw Wax

One way to help either screws and nails penetrate wood without splits is to use beeswax on the fastener. In fact, some carpenters will drill a hole in the end of a wood hammer handle to fill it with beeswax. An alternative is to buy a wax seal for a toilet. It's made of beeswax processed to stay soft, and costs much less.

## Sizing Dowels

For a good joint, a fluted or spiraled dowel must fit snugly enough in the hole to allow the glue to come up around it. The dowel should reach to the bottom of the hole and be used with enough glue. For insurance, apply glue to both the sides of the hole and to the dowel itself.

## Spinning Nails

You can avoid splitting or marring wood, such as hardwood moulding, by using what is called a nail spinner. With this low-cost device chucked into your power drill, you just insert the nail and then "drill" it into position. The nail will penetrate to within 1/4 in. or so of the surface, then you can drive it home with a hammer and a nail set.

## Temp Watch

The time needed to glue up wood in a cold workshop may be twice as long as in one at room temperature. Below certain levels, cold temperatures can weaken joint strength because the glue can't form a continuous film as it dries. If too cold, the glue may not work at all. For yellow aliphatic glues the minimum temp is about 40 degrees F.; for white polyvinyl acetate glues it's about 55.

## Thinner To Thick

When building a deck, always nail a thinner member to a thicker member. Hot-dipped zinc-coated nails are a good choice. For more holding power, consider using either ring- or spiral-shanked nails, or go with deck screws. If using screws, it's best to pre-drill pilot holes.

## Triangle Trick

When dry-fitting boards to be glued up later, here's a trick to help you make sure you will be able to get them back together in the right order. After the boards are in the desired position, draw a triangle large enough to cover all the boards of the section. Later, before clamping, just re-create the triangle as you assemble the boards.

## Wood Splits

To reduce wood splits, such as when building a deck, first drill pilot holes for the nails using a bit size about three-quarters the diameter of the nail. In a pinch, if you don't have a bit you can chuck in one of the nails being used. Blunting the nail point will also help prevent splits, since a blunt nail will tear, rather than spread the wood fibers. An alternate method to avoid splitting the ends of boards is to allow an extra length to hang beyond the edge of the deck, do the nailing, then use a circular saw to trim off the ends.