

# Woodworking tips

## Everything You Need To Know About Clamping

There is an unwritten woodworking law that says, “You never have enough clamps.” Just when you think you have all the clamps you could possibly need to tackle any project, along comes one requiring just two or three more than you have on hand. And when is this most likely to happen? More often than not, AFTER you've slathered glue all over your mating project components and have started to put everything together. PANIC TIME!

### Types of Clamps

By far, the most useful clamps for today's woodworker are Hand Screws. Their wooden jaws won't mar workpiece surfaces and can be moved in either a parallel or non-parallel action by tightening both screws in unison or one screw more than the other. Offering double screws and deep throats, they give you the ability to grasp a variety of odd shapes and apply either a broad area of evenly distributed pressure or a high concentration of pressure at a single point.

To use a Hand Screw properly, grasp the handle on the center spindle with one hand and the outer handle with the other. Open or close the jaws by rotating your hands in a clockwise or counter-clockwise motion while you hold onto the handles. Apply the appropriate amount of pressure by turning the outer handle, using the center spindle as a fulcrum point.

For gluing-up large projects, we recommend lightweight Aluminum Bar Clamps. They provide superior strength, but without the drawbacks heavy, cumbersome, iron pipe clamps. Plus, unlike iron, aluminum won't react with certain glues, which can leave unsightly stains on your workpieces.

Most models feature quick-release mechanisms to speed-up the adjustment process. They're great for gluing-up panels, large cabinet carcasses and other types of project components where a longer reach is required. Place one diagonally from corner-to-corner on cabinet glue-ups to “rack” your carcass into square.

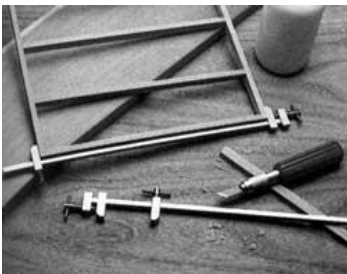


Aluminum Bar Clamps



Here are some other tools that fall into this category of “bar-type” clamps. They typically offer smaller capacities than the aluminum models described above, but still feature quick-release mechanisms for rapid adjustments. Among these are the following:

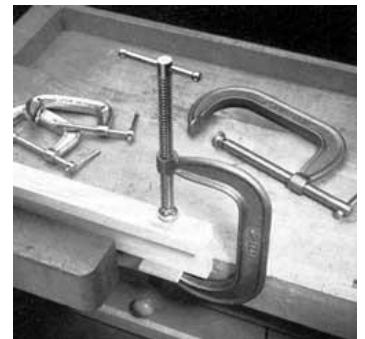
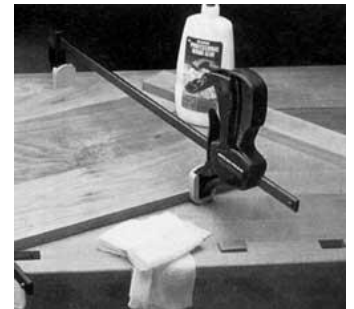
- The classic pipe-type clamp fixtures that are readily available at most home centers and hardware stores. These are made to fit onto lengths of 1/2" or 3/4" diameter galvanized or steel pipe. They're inexpensive, plus give you the ability to have a number of different lengths of pipe available for a
- Small, steel bar clamps are also readily available in lengths from 12" up to 36" or even 48". They usually slide on small, rectangular bars and offer twist-type wooden or plastic handles for tightening.
- K-Body-type bar clamps are similar in design to the small steel versions mentioned above. They, too slide on rectangular steel bars and tighten with a twist-type handle. However, they offer wider, square jaws to distribute pressure more evenly and are designed to open and close parallel to one another. They're available in larger sizes and can be quite costly.
- Pistol-grip style, quick-release bar clamps are a good choice for rapid, one-hand gluing operations where speed of application is more important than the amount of clamping pressure to be exerted. These are normally available in capacities up to about 36".



Model-makers bar clamps are very small in size and are most often used by those who build very small projects such as doll houses, miniature furniture, small gift boxes and the like.

*Brass bar Clamp*

- **C-Clamps** are an “old standard” of woodworkers everywhere. Since they're so inexpensive, they're great stand-byes for those once-in-a-while projects that need to be clamped in dozens of different places all at once.



- There are a number of specialized C-Clamps available. For example, there are deep-throat models that will allow you to reach in further from the edges of your workpieces.





- There are also [three-way versions](#) with an additional, sideways jaw for applying veneered edging strips or “breadboard” edging to plywood shelves and furniture tops.
- Special, quick-release C-Clamps are also available. These models offer a lever that you squeeze to open and close their jaws in an instant for rapid adjustments.
- Do remember, however, when working with any C-Clamps that their steel jaw pads will mar your workpiece surfaces, so you should always use wooden cauls

(small, protective pieces of scrap wood) between the jaws and those surfaces to protect your project during assembly.

- **Spring Clamps** are often a great substitute for C-Clamps, Hand Screws or other types of clamps in those cases where speed of application is more important than gripping power.
- Working much like a clothespin, you merely squeeze the handles together to open the jaws, then release them to clamp your components together. These are normally available in opening capacities ranging from 1" to 3" or 4" and are quite inexpensive.

**Double Bar Clamps** make gluing-up wide panels a much easier task. They feature a unique, two-way clamping system that holds your workpieces perfectly flat while it squeezes them together during assembly.



These clamps offer wooden bars with a specially milled, ever-so-slight radius that distributes downward pressure evenly over the entire surface of the glue-up as the metal jaws (attached to a scissors-like mechanism) squeeze the boards inward. No more bowing or cupping!



**Wooden Cam Clamps** are light in weight, yet can easily exert up to 300 lbs. of pressure, when necessary.

Typically made of hardwood with steel bars, they work with an eccentric cam-type tightening mechanism and offer protective cork jaw pads that also minimize slippage. The larger sizes of these offer throat depths that exceed most bar-type clamps (often up to 6" or more)...a real advantage when you need the added reach for certain types of glue-ups.



**Web Clamps** are often the only way to grasp certain odd-shaped or extremely large projects like chairs, large pieces of furniture, drawers, etc. They're typically made with a nylon webbing material (usually 12 to 15-feet long), attached to a metal tightening mechanism. Flip a lever to release the tension for quick adjustments, then turn a ratcheting mechanism to apply pressure. They're usually fairly inexpensive and often the only way to grasp certain types of project components.

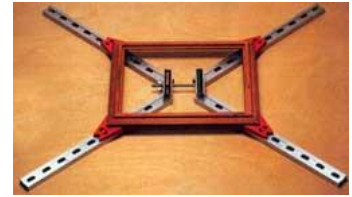
**Frame Clamps** are similar in design to Web Clamps...with the addition of angled, 90° clamping corners that help you apply equal pressure to all four corners of your frame at once.



With these clamps, you merely insert your components and turn a single handle or wing-type nut to tighten the clamp and draw all four pieces of your frame together at once. They can also be used to clamp drawers, doors and other types of projects.

Another type of frame clamp offers a series of rigid metal arms and adjustable corners that are tightened with a single, center wing nut.

These are also fairly inexpensive, can be used for picture frames or cabinet door assembly and can often accommodate a wide range of project sizes.



## Shop-Made Clamps

Sometimes, you need a specialized clamp that just isn't available in order to perform a unique holding task. In those cases, you may have to make it yourself. Here are a couple of examples of shop-made clamps that you can put together in about half an hour.

The first is nothing more than a couple of strips of hardwood (we used hard maple) containing a series of 3/8" diameter holes. This is an excellent tool for clamping a stack of parts together, "sandwich-style". Just use a couple of 3/8"-16 threaded rods, some fender washers, hex nuts and wing nuts to draw everything together. If you're planning to use a clamp like this to apply a great deal of pressure, you might consider making it out of steel bars or angle iron.



Wedge Bar Clamp

The second of our two shop-made clamps is a variation of the first, designed for more rapid assembly and disassembly. Instead of a series of holes, it offers a single position at each end. The bottom piece contains two 3/8"-16 Tee-Nuts, driven into shallow counterbores on the bottom side of a piece of hardwood (as before, we used hard maple). Once again we used two 3/8"-16 threaded rods with fender washers and wing nuts to apply the appropriate amount of clamping pressure. The slotted ends allow quick, simple attachment and removal of the clamp.



Slotted Bar Clamp

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