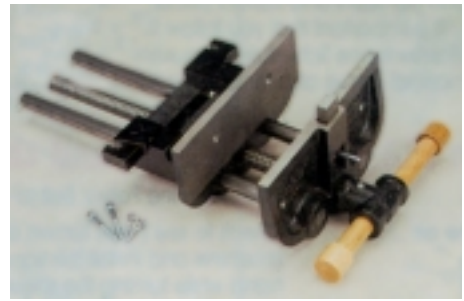
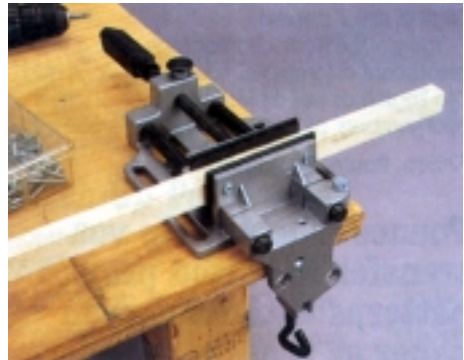


The second is a larger capacity, heavy-duty model with a quick-release mechanism that allows you to open or close the jaws almost instantly with the flip of a single lever – or by merely turning the tightening lever counter-clockwise. These are the number one choice of serious woodworkers.



The **Combination Bench and Drill Press Vise** is a sturdy, portable work-holder that can be mounted permanently or temporarily on your workbench or to the drill press .



Although it has a relatively small holding capacity as a bench vise, it's ideal for gripping round stock or small objects that you're planning to drill on your drill press.

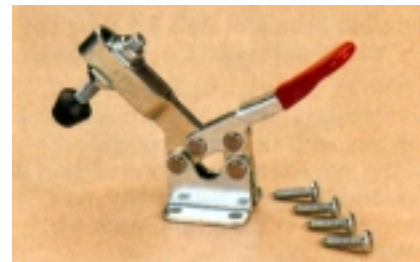
**Hold-Down Clamps** are vise-like devices that attach to the top surface of your workbench and allow you to either clamp projects components together there...or hold them tightly in position while you sand them, plane them, rout them or perform other operations.

Usually, they come with special mounting bolts that drop into counterbores in your bench surface when not in use, then can be pulled up to engage the bottom of the Hold-Down Clamp when you want to use it. These devices are inexpensive and very handy for certain operations.



**Toggle Clamps** are another type of Hold-Down Clamp that can be used to either hold project components rigidly to a benchtop...or to a jig or fixture that's being used with a machining operation such as tenoning, pattern sawing, etc.

Activated quickly with a single clamping lever, they make inserting and removing workpieces on fixtures much more convenient, offer a fairly narrow range of thickness adjustment (usually less than an inch) and are quite affordable.



## Some additional ideas for handy clamps you can make from household items or “stuff” you may have available in the shop.

Chances are, you have loads of other handy clamping devices around the house that will help you tackle all types of holding jobs – often without spending one red cent. Here are a few examples:

- **Spring-type clothespins** make excellent clamps for holding miniatures and other small craft-type projects. Some other examples in this category include: **Office (paper) binder clips** – **medical hemostats** – even **bobby-pins** (for extremely small projects).
- **Rubber bands** can be used to hold both small projects and large. Usually, the larger the bands are, the better. You can always double or triple them around the project for more gripping power. Shipping supply companies often offer huge “pallet bands” that are an inch or so wide and stretch to hold items that are 6-feet or more in circumference.
- **Bicycle inner tubes** can be cut into strips or left whole to serve as clamping aids.
- **Rubber surgical tubing** has just the right amount of stretch to hold all types of project components together.
- **Your drill press** makes an excellent “press-type” clamping device. Just position your project components under the chuck, apply the appropriate amount of pressure with your quill lever and lock it into position while the glue sets-up.
- **Your lathe** can also provide this type of clamping pressure.
- **A 25# bag of lead shot** is great for pressing large, odd-shaped project components together while the glue sets-up. You can get this at a gun shop or sporting goods store that sells re-loading supplies. As an alternative (for holding square or flat projects together), try making a plywood “Clamping Box” filled with 10# to 25# of sand or shot and fitted with a convenient lifting handle.
- **A bag of sand** can be used in the same fashion.
- **A piece of clothesline** can take the place of a web or band clamp. Just loop the rope around your project, insert a short piece of wood or dowel and tighten everything up like a tourniquet.
- **A pair of pliers** can be turned into a clamp. Just insert the parts to be clamped between the jaws, then wrap a rubber band around the two handles.
- **PVC pipe** can be turned into a spring-type clamp by sawing off a piece about 1” to 2” long and cutting a slit through it. Then, spring it apart and slip it over the components to be clamped together. Smaller diameter pipe will exert more pressure, but offer less capacity than pipe that’s 3”, 4” or 6” in diameter.
- **Automotive hose clamps** can be used for holding round or oval parts during assembly. For larger parts, connect multiple hose clamps together.
- **Duct tape** can make an excellent clamping aid. It’s strong and if it gets glue on it, just throw it away.
- **Ace bandages** can also be used to hold odd-shaped projects together during glue-up or trial fitting.

## Some valuable clamping tips

- To make sure all joints fit properly, dry-clamp all components before gluing them together.
- Mark all workpieces carefully before clamping and gluing to ensure accurate assembly.
- Use a Double Bar Clamp or alternate Aluminum Bar Clamps (one above and one below) when gluing edge-to-edge to prevent buckling.
- Use small pieces of scrapwood as *protectors* to keep the jaws of your metal clamps from marring workpiece surfaces.
- If you find that your workpieces want to “slip & slide” during glue-up, first, apply the glue, then rub two pieces of coarse grit sandpaper together lightly above the glue. The grit that comes off the sandpaper will prevent the slippage problem.
- Small “doughnuts” of foam pipe insulation slipped over the galvanized or steel pipe of your pipe clamps will keep them from touching (and staining) the surfaces of your projects.
- The discarded jaws from auto jumper cables make great spring clamps.
- When you have to apply clamping pressure directly over a glue joint, cover the joint with waxed paper or kitchen plastic wrap first to keep the jaws of your clamp from being permanently glued to your project.
- Always maintain a liberal coat of linseed oil or furniture paste wax on hand screws to prevent glue build-up on the jaws.
- Lightly lubricate the screws on your clamps occasionally to prevent rust.
- Be careful to choose the right sized clamp for the job. Don’t try to apply excessive amounts of pressure with a small C-Clamp...or grip a miniature project with a 12” Hand Screw.