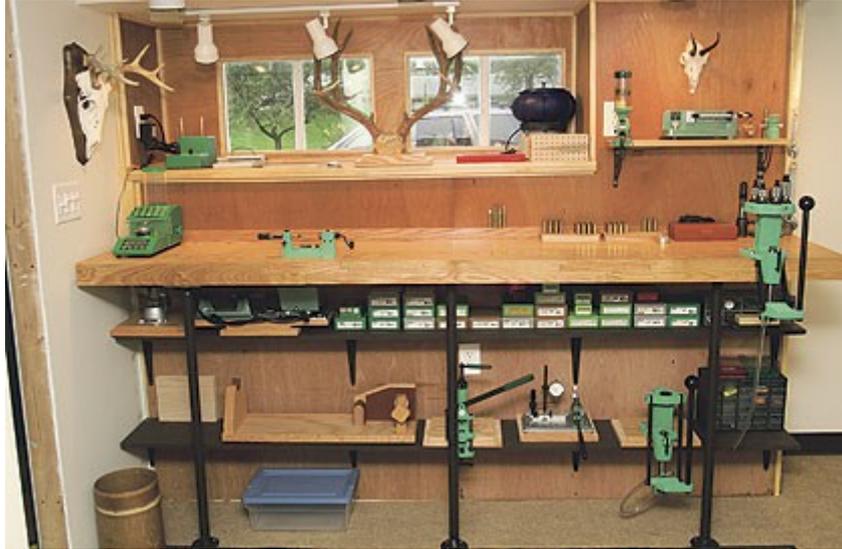


Bench Strength

Every good load begins with a good bench.

By Terry Wieland

Twenty years ago gunwriter Wiley Clapp published an article explaining how to make the ultimate loading bench. The ultimate.



At the time, I was living in a one-bedroom apartment, 21 stories up, in downtown Toronto. My rifles dwelt in one corner of my closet with a handful of Lee Loaders on a shelf, and my dining-room table (with the computer shoved to one side) was as close to a bench as I was going to get.

Still, I read and reread the article and was reminded of it every time I pulled out the paraphernalia to concoct another half-dozen rounds. "A bench," thought I. "My kingdom for a bench!"

When I moved to an old farmhouse in the country a couple of years later, I bought (in this order) a pickup truck, the complete Skeeter Davis collection and the wherewithal to build Wiley's shimmering vision of the perfect loading bench. Oh, yeah--I also acquired a red tabby cat. As any devoted reader of Dean Grennell will attest, no loading bench is complete without a cat.

Now, over the years any number of articles have attempted to show readers how they can have room for a proper loading bench anywhere from a palace to a pup tent. Some designs are even portable--contraptions you can transport to the firing line and load every round fresh.

That is not the goal here. This is a bench to be installed with loving care and attention to detail in your primary abode where, with any luck, you will live happily ever after. It is solid, heavy, affixed front and back to the floor and wall, and, if an earthquake strikes, if anything is left standing it will be your loading bench with you sheltered safely beneath. It's that good.

In fact, your bench could become a family heirloom. My first one did. My son lusted after it so mightily that I finally unbolted it from the wall, handed it over and set out to build another--with a few modifications.

This article is rather heavily illustrated, so I will not attempt to describe what the photos readily show. However, an explanation of principles:



Power tools are a great help in making cuts that are straight, even and located where they are supposed to be.

LIST OF MATERIALS

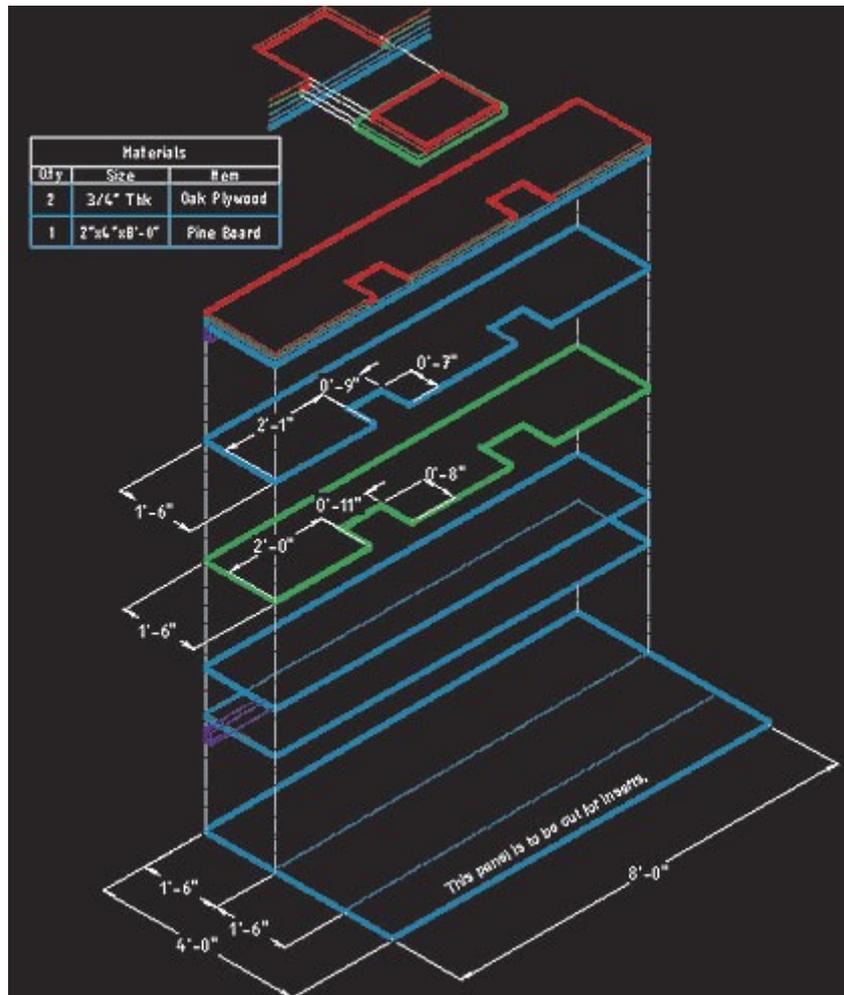
- Four plywood sheets, 8'x18"x3/4". These can be cut from two standard 4'x8'x3/4" sheets. Oak or birch is recommended.
- Two plywood sheets, 8'x12"x3/4". For inserts. These are left over when the above sheets are cut.
- One 8' 2x4, high quality, straight. For wall mount.
- One 1"x2"x8' oak (for trim along back of bench).
- 3/4"x3" oak facing (for bench). Ten feet total length.
- 3/4"x1 1/2" oak facing (for inserts). Eight feet, approximately, depending on number of

inserts.

- Three 1 1/2-inch steel pipe (38 inches approximately, depending on desired height, threaded at both ends).
- Six 1 1/2-inch pipe flanges.
- Wood glue.
- Lag bolts (for 2x4 wall mount).
- Wood screws—assorted lengths (for fastening layers together, fastening bottom layer to 2x4, attaching leg flanges to bench and floor, fastening trim strip along rear of bench and attaching oak facing).

The first requirement of a loading bench is stability; it must be solid. Full-length-resizing, swaging bullets and working a multistage press all require some serious mechanical advantage. A bench that lifts, flexes or buckles is useless.

After stability comes a whole host of secondary requirements: good lighting, room to spread out, secure storage areas, electrical outlets and an efficient layout that allows error-free loading operations.



A scale drawing of the author's reloading bench.

Your bench must also be versatile, and therein lies a problem: Versatility and stability do not readily coexist. When a press is attached to a bench with four heavy bolts, it does not easily move out of the way.

With the proliferation of loading tools over the last 20 years (and every one of them essential), this demand is more urgent than ever. Wiley Clapp designed his bench with a system of inserts that allows the user to move tools readily here and there, yet have them securely fastened when they are needed.

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Another concern is specialization. Since 1985 the practice of handloading (like every other shooting activity) has become highly focused. The ideal bench for a shotshell reloader does not resemble a bench for a competition handgunner. A rifleman who works with either nitro-express cartridges or old black-powder numbers--to say nothing of the .50 BMG--will have different requirements again.



Fashioning the dovetailed cavities for the inserts requires some careful chiseling and filing in order to make them a neat fit with no gaps but not so snug that they are difficult to remove. Here the bench is seen with its component layers clearly visible, inserts in various stages of completion, the front facing partly applied.

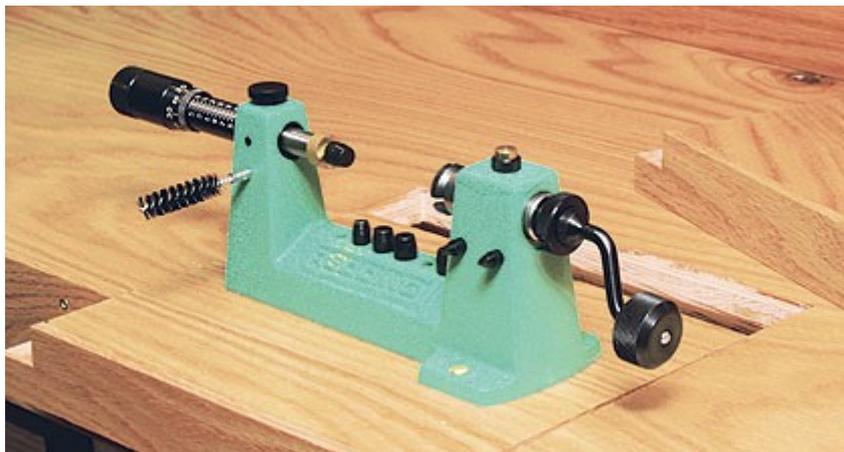
For example, on my first bench I had one old Lyman press, and that was it. Today I use two Reddings (a T-7 turret press and the giant Ultramag) and an RCBS Rockchucker.

The design described here is intended primarily for riflemen but with the versatility to accommodate any tools you might need for occasional work with shotshells or high-volume pistol cartridges.

The finished bench is eight feet long, 18 inches wide and three inches thick. It is constructed from four sheets of 3/4-inch plywood, bonded into a single, solid unit with glue and screws.

At first glance the dimensions seem odd. Only 18 inches deep? In fact, that is more than sufficient for actual loading operations. Making the bench deeper only invites using it as a storage area--not a good idea since that might lead to mixing up powders or primers. Store the components elsewhere, and move them to the bench only when needed. Its width also discourages use as a general work bench.

Then there is height. I am a "stand up" reloader; others prefer to sit. The bench should be installed at the appropriate height. The top surface of mine is 42 inches from the floor.



A finished insert with facing and Redding 2400 case trimmer attached. The inserts allow tools like this to be fastened firmly to the bench when needed but stored out of the way when not in use.

My construction material is slightly different than Clapp's original, which called for a combination of plywood and particle board. The particle board was used for the inner two layers--the ham in the sandwich.

When the time came to build my new bench (and avoid the mistakes of the first) I used the best oak plywood I could find for everything, for two reasons. First, particle board absorbs moisture readily and expands. If either the inserts or the bench itself employs particle board, you will encounter serial fitting problems. This is not a concern in southern California, perhaps, but certainly in other parts of the country.

The other concern was surface durability. The first time around I coated the bench with varnish, but this did not really protect the soft plywood. This time I have hard oak with a simple oil finish. It's durable, easily repaired, and (like a fine gunstock) it will just get better looking as time goes by.

As you can imagine, this is one heavy, solid bench, and when it's lag-bolted to the wall and the legs bolted to the floor, it is solid as a vault.

NOW FOR VERSATILITY

The heart of this bench is its inserts. About two feet from each end are dovetail slots, into which fit plywood inserts that are 1 1/2 inches thick. These are made from two layers of the same material as the bench itself (actually from the narrow plywood strips that remain after the layers are cut to size). Tools are mounted on these inserts, which slide into the dovetails when needed and are stored out of the way when they're not. The inserts are a tight fit and can be made absolutely immovable using through-bolts, if you choose to do so.

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When no bench-mounted tool is needed, two insert blanks give you a perfectly smooth bench surface.



The legs are steel pipe, cut to length and threaded into flanges on both bench and floor. This allows the bench to be leveled, then bolted firmly to become rock solid.

The inserts are simple in theory, but to a non-carpenter like me, they are tricky. You want a snug fit with neat edges and no gaps; at the same time, the inserts must slide in and out without a struggle. This is not easy to achieve. Particle board, which swells up at the forecast of drizzle, is a nightmare if you install your bench where there is any dampness. My new inserts are plywood top and bottom (instead of a particle-board base and plywood top), so swelling is not an issue.

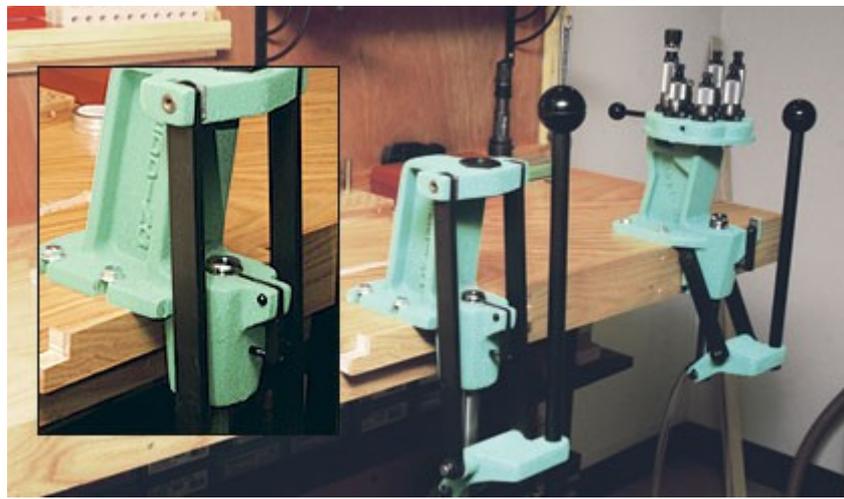
Finally, the legs. The legs of this bench are Wiley's original prescription of steel pipe threaded into flanges top and bottom. The flanges are bolted to bench and floor. The back of the bench is fastened with lag bolts to an eight-foot 2x4, which, in turn, is firmly bolted to the wall.

On my first bench I used 6x6-inch cedar posts fastened with angle irons, which worked well enough. The steel pipe, however, is easier to level by screwing the flanges up or down and also gives you more room beneath the bench. There I have two eight-foot shelves to hold bench inserts and tools, dies and small drawer units.

CONSTRUCTION

The first step is to buy a straight, eight-foot 2x4 for the bench support on the wall and bolt it on at the appropriate height.

Have two sheets of 3/4-inch plywood cut into four pieces, each 8'x18". This leaves two strips 8'x12".



The Redding T-7 is bolted permanently to the bench; the Ultramag, used less frequently, is attached to an insert and can be moved onto the bench in an instant and put away just as quickly.

It is possible to build the bench and then install it as a unit, which is how I did the first one. This time, however, I bolted the 2x4 to the wall, had the legs cut to length and threaded, then immediately fastened the bottom layer of plywood to both the legs and the 2x4. One piece of plywood is much easier to install and ensure it is level in every direction.

By attaching the first (bottom) sheet of plywood to the 2x4 as a foundation and building up from there, you avoid the use of angle irons to attach the bench to the wall, and the 2x4 becomes an integral part of the bench.

A caution: Don't assume your floor is level. You may require legs of slightly different lengths to accommodate undulations, and even then you might find yourself shimming the flanges. All of this is considerably easier working with just one layer of plywood to begin with.

Once it was in place, fastened firm and level, I glued the second sheet on top. With the third sheet, it becomes more complicated since it has 11x8-inch cut-outs for the inserts. The fourth (top) sheet has corresponding cut-outs of 9x7 inches, which overlay the notches below.

Whichever way you choose to construct the bench, I suggest gluing and clamping one layer at a time. Trying to fit and glue all four simultaneously is very difficult.

Also, you need to take particular care with the top sheet. When the time comes, it is best to have one insert base already made so you can see how it fits. You do not want to fasten the top sheet down as tight as it will go because it will squeeze the inserts like a clamp. Before gluing it down, sand the underside of the top layer where it grips the inserts, to reduce friction.

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Cutting the slots in the top two layers to create the female dovetail, and fitting them together, is the most time-consuming aspect of the whole operation. It is further complicated by the fact that there are two cuts in each sheet. It is almost certain your slots will not be identical, which means your inserts will not be wholly interchangeable.

INSERTS

The base of each insert is 11x8 inches; the top is 9x7 inches.

It is best to fashion the inserts one at a time. I expect it is possible to make them all completely interchangeable in both slots, but doing that and keeping them a tight fit without obvious gaps was beyond my cabinet-making skills. In the end, each insert was custom made, honed and beveled to fit snugly in its intended slot.

Drawing on the experience of my first bench, where I glued the inserts together all at once and fitted them after the fact, I took considerable time to sand the dovetails in the bench to reduce friction wherever possible--on the flat, the undersides of the lips and along the edges where raw plywood rubbed raw plywood. The trick here is to take off just enough, but not so much that you



The RCBS ChargeMaster combination digital scale and powder measure. The ChargeMaster and case-prep center (behind) normally live on the shelf above the bench, out of the way but instantly available.

create unsightly gaps or make the insert too loose.

After sanding, I put a coat of hard paste wax on all the contact surfaces. They now fit snugly but slide in and out readily.

The final touch was a facing of 3x3/4-inch oak on the exposed edges of the bench, with matching facing on each insert. After sanding, tung oil on the working surfaces gave it all a nice glow.

Now you may ask, How strong and stable are these inserts? I have had an RCBS Grand shotshell reloader mounted on one, a unit that weighs 50 pounds fully loaded and exerts an enormous amount of torque. Held by just one through-bolt, the insert becomes immovable and the press works as if it were bolted permanently to the bench. Yet it can be installed or moved out of the way in a minute.

At this point, the handloader can modify the design in any number of ways to suit his own requirements. It is infinitely versatile.

Most tools do not require the added strength and stability of a through-bolt. In fact, with properly snug-fitting inserts like I now have, through-bolts may not be required at all. So this time I am not drilling any holes for through-bolts until (if!) I find an application that requires one. And even then, I will use only one bolt per insert rather than two. The blanks that fill the slots when no tools are needed can be drilled for through-bolts or not. The advantage of doing so is that you can position some long tools, like a power case trimmer, to a long board and fasten it to the bench at each end using the through-bolts.

With so many instruments, implements and paraphernalia, it is natural that a loading bench becomes cluttered. To combat this, I have installed two eight-foot shelves underneath the bench to hold the inserts with tools attached, as well as my mushrooming collection of loading dies. There is also a small shelf firmly affixed at eye level above the press to hold my trusty RCBS 10-10 scale and my Redding powder measure.

The final touch is a 1x2 oak strip, eight feet long, along the back of the bench. It makes the surface look finished and also provides a neat little shelf to hold my cartridge collection.

And that's it. I'm never building another one. And, barring divorce, I won't need to.